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FRANCIS DAY (1829-1889) AND HIS COLLECTIONS OF INDIAN FISHES

P. J. P. WHITEHEAD
AND
P. K. TALWAR

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
HISTORICAL SERIES Vol. 5 No. 1
LONDON: 1976

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Copyright, 1978, by the American Society of Ichthyologists and Herpetologists

FRANCIS DAY (1829–1889) AND HIS COLLECTIONS OF INDIAN FISHES. By P. J. P. Whitehead and P. K. Talwar. 1976. Bulletin of the British Museum (Natural History), Historical Series, vol. 5, no. 1, 189 p., 318 pls.—The renowned English type writer Peter Whitehead has done it again, this time in appropriate collaboration with the distinguished Indian ichthyologist P. K. Talwar. Those of us who also are in the type writing game are much in the debt of these two authors, who must have devoted many hundreds of hours to mining for pertinent information from sources ranging more than half way round the globe and in organizing their findings into a coherent story and an accessible format.

The heart of the work is compiled into four, fold-out pages entitled "Table of New Genera and Species Described by Francis Day, With Registered Numbers for Possible Type Specimens In Eleven Institutions." Much of the 189 page treatise is devoted to documentation and explanation of the table. The many taxonomists who will use this table as a working tool in their researches will be grateful indeed to Whitehead and Talwar.

An important reason for the wide dispersal of Day's collections is the unfortunate 23 year long quarrel between Day and A. C. L. G. Günther, which is described in exhaustive detail, the minutiae being presented and dissected with zeal and delight (protests to the contrary notwithstanding) not evident in the more tempered account by A. E. Gunther (A century of zoology at the British Museum. Folkestone, Wm. Dawson and Sons Ltd. 1975).

Much of the book is taken up with bibliographic and biographical accounts, and although neither Hollywood nor even the BBC will bid for the script (the prose style runs to mid-20th century fish description), I myself found it of some interest, having always enjoyed studying the lives of the worthies in whose footsteps I trudge.

It surely is cavalier to criticize this useful work, but I do have two negative comments, neither of which should be taken to mitigate against its overall excellence. The first concerns the seemingly endless footnotes and parenthetical comments that present excruciatingly irrelevant details. I suppose that the authors are making a pretense at social history, and perhaps to some small degree they succeed, but mostly these maddening inclusions serve to detract from the stated objectives of the work. My second criticism concerns a lack. It surely would be of value to ichthyologists and historians alike to know Day's batting average. Who but Whitehead and Talwar would be better equipped to attempt an approximate tally of the present day validity of species described by Day, master monographer of the Indian fauna? —DANIEL M. COHEN, *Systematics Laboratory, National Marine Fisheries Service-NOAA, National Museum of Natural History, Washington, D.C. 20560.*

FRANCIS DAY (1829-1889) AND HIS COLLECTIONS OF INDIAN FISHES

HISTORY

BRITISH MUSEUM
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BY
P. J. P. WHITEHEAD
AND
P. K. TALWAR

Pp 1–189 ; 4 *Plates* ; 3 *Text-figures*

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
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LONDON: 1976

THE BULLETIN OF THE BRITISH MUSEUM (NATURAL HISTORY), *instituted in* 1949, *is issued in five series corresponding to the Scientific Departments of the Museum, and an Historical series.*

Parts will appear at irregular intervals as they become ready. Volumes will contain about three or four hundred pages, and will not necessarily be completed within one calendar year.

In 1965 *a separate supplementary series of longer papers was instituted, numbered serially for each Department.*

This paper is Vol. 5, *No.* 1, *of the Historical series. The abbreviated titles of periodicals cited follow those of the World List of Scientific Periodicals.*

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Among those who served abroad with the Honourable East India Company (or, following the Indian Mutiny, the Crown) were some who put their education and interests to good use after duty hours, in spite of the demands of the Mess, the Club and the trivial social round. In fact, the European communities, which Mathew Arnold's brother hoped to raise 'from the depths of immorality, gradually to a state of Christian earnestness', harboured numerous amateur artists, naturalists, archaeologists, embryo-ethnologists and the like, all fascinated with the bizarre world around them and anxious to explore it. One such man was Francis Day, to whom India owes its still most comprehensive treatise on Indian fishes.

Francis Day was unusual. His relentless pursuit of a hobby earned him not only recognition, but also an official post, that of Inspector-General of Fisheries. In a sense, he paved the way for a later professional class that no doubt proved more efficient, but which seems in retrospect to have lacked something of the individuality, the dedication and the sheer grit of the earlier pioneers. To attain what he did, Day showed a determination that well matched his intellectual abilities. Our study reveals a strong, even self-righteous and certainly highly critical personality. Yet, given his great achievements, one is forced to admire his singleness of purpose and enormous capacity for hard work.

Ichthyology is still much concerned with old collections of fishes and the type specimens that they contain. For India, Day's collections are of great importance. They have never been adequately studied and few have realized how many and how scattered are the institutions that received Day's Indian material. Our biographical sketch is largely to explain this distribution and to show the extent to which it was governed, not so much by the future needs of ichthyologists, as by Day's antipathy to Albert Günther of the British Museum. Science today is no less prone to such animosities, but the historical perspective is often a useful tonic.

P. J. P. Whitehead
P. K. Talwar
20 *October* 1975

Device used by Francis Day as a letter-head
and on envelopes

FRANCIS DAY (1829–1889) AND HIS COLLECTIONS OF INDIAN FISHES

By P. J. P. WHITEHEAD & P. K. TALWAR

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INTRODUCTION

Francis Day (1829–89) was one of the outstanding figures in that phase of ichthyology which called for comprehensive works on the fishes of particular regions. What Day achieved for Indian ichthyology is closely paralleled by the work of his near-contemporary Pieter Bleeker (1819–78) in Indonesia, and there are indeed many similarities in their careers.* Both men made extremely large personal collections and each crowned his study with a well-illustrated summary of the fishes of the region (Bleeker's *Atlas* of 1862–78 and Day's *Fishes of India*, 1875–88). That both men were military surgeons, pursuing their studies only in leisure hours (at least initially in Day's case), is a reflection of the manner in which much natural

* An English translation of Bleeker's autobiography (Bleeker, 1878, 1881) has now been published by Lamme (1973). Like Day, Bleeker had many other interests besides ichthyology. He too wrote on the medical topography of his station (Batavia), taught at the newly instituted medical college, and wrote on cholera; also, he compiled an account of the Moluccas which, like Day's report on the Andamans, or his book on Cochin (see pp.44 and 88 below), is remarkable for the diversity of topics that he felt competent to write about.

history was undertaken in the last century. Bleeker was the more prolific of the two (500 ichthyological works by Bleeker listed in Weber & De Beaufort, 1964 and 18 further papers listed by Lamme, 1972 ; 144 works by Day listed in Dean, 1916) but their *magna opera* still provide, a century later, an essential basis for modern studies.

Day's huge fish collections, like those of Bleeker, found their way into a number of museums and it is unfortunate that systematic workers have frequently assumed that the 'types' in one museum were the only ones existing. In fact, Day's specimens are now in at least twelve institutions. The largest of these Day collections is that at the British Museum (Natural History), where over five thousand specimens are deposited. Since Day wrote the *Fishes of India* in England on specimens that he had brought home with him, and since he was a constant visitor to the British Museum, one might suppose that this London collection is the most important of all. Curiously enough, Day considered the British Museum to be among the minor repositories of his types.

To understand the reason for this it has been necessary to probe the quarrel that evolved between Day and Albert Günther (1830–1914) of the British Museum, an episode that deserves oblivion were it not for the light that it throws on the distribution of Day's material. It was a quarrel whose origins must be partly guessed at, but once begun it smouldered for over twenty years, flaring into almost open warfare at times. It was within this climate that Day apportioned specimens from his huge collection to the major museums of the time.

A list of Day's species and the registered numbers for specimens in eleven institutions are tabulated (p. 154), but without designation of lectotypes or preference for any particular specimen(s) beyond an indication of those that were used for figures in the *Fishes of India*. As with Bleeker's specimens, confirmation of type status requires individual investigation (Whitehead *et al.*, 1966 ; Talwar & Whitehead, 1971).

Day occasionally based new species on drawings from the Tickell collection, a reference that has often puzzled ichthyologists. We have given a brief description of Col. Tickell's work (p. 112). In dealing with Day's donations to the India Museum in London, we have discussed also those of Cantor and of Sykes, whose collections later came to the British Museum (pp. 121–122).

The biography of Day, for which the sources are in England, was written by the senior author ; the distribution of Day's specimens and the listing of Day's species and possible type specimens was a co-operative effort, as is also the final form of the text.

ACKNOWLEDGEMENTS

The stimulus to expand a brief biographical note into the sketch given here was the discovery of manuscript and documentary material in the Cheltenham Public Library, which is most warmly thanked for the loan of these items ; especial gratitude is due to Mrs N. B. Pringle for her valuable help in unearthing obituaries and other useful data. For the second source of biographical information we are indebted

to Cmdr Reginald Egerton, R.N. (retired), grandson of Francis Day, and to his son Reginald Ansell Day Egerton and Mrs Egerton, who were generous to a degree in making available family documents, portraits, annotated books, letters and other manuscripts. The third major source was the India Office Records, London, whose bewildering array of official documents was patiently explained and often initially searched by Mrs Sally Hofmann ; we are also indebted to Mr Ray Desmond for locating Minute Papers and three Day letters relevant to the India Museum.

Many other aspects of this study were made possible by generous help in searching old records or suggesting further sources and we would like to thank in particular Mr R. S. Bird, Public Library and Museum, Tunbridge Wells (Day family records), Mr J. P. Brooke-Little, Richmond Herald of Arms (Day coat-of-arms), Dr A. S. Clare, Royal Scottish Museum, Edinburgh (no Day specimens of 1889), Mr E. M. Dring, Bernard Quaritch Ltd (unsold *Fishes of Malabar*), Mr R. Fish, Zoological Society, London (Day's letters and drawings), Mrs W. Hill, Secretary of the Ootacamund Club (trout trophy in Club), Miss Caroline Jakeman, Houghton Library, Harvard (no Day letters), Dr K. Joysey, Zoological Museum, Cambridge (Day's bird specimens), The Law Society, London (F. M. Day's career), Mr J. B. Lawson, Shrewsbury School (records of Days), Mr R. Mackworth-Young, Librarian, Windsor Castle (data on H. Fisher), Miss M. McDerby, Church Farm House Museum, Hendon (Wm Day's mineral specimens), Mr J. E. Norris of the Railway Club, London (rail fares in 1886), Dr S. T. Satyamurti, Director, Government Museum, Madras (no Day letters), Mr J. F. Saunders, East Sussex County Library (Day family records), Mr P. Wade, Royal Society of Medicine (Day's medical papers), Miss K. Wallace, East Sussex Record Office (Day family records), and Messrs Winterbotham, Gurney & Co., Solicitors, Cheltenham (tracing Day's descendants).

The task of listing potential type specimens of Day's species was immeasurably aided by members of other institutions, often at what must have been considerable sacrifice of their own valuable time. For copies of acquisition registers, extracts of museum reports, photocopies of Day's letters and, in the case of the Vienna collection, a listing of *all* Day specimens, we offer our most sincere thanks to Dr M.-L. Bauchot (Paris), Dr M. Boeseman (Leiden), Dr P. Kähsbauer (Vienna), Dr C. Karrer (Berlin), Professor G. S. Myers (Harvard), Dr G. Nelson (Chicago), Professor L. Pardi and Dr Marta Poggesi (Florence), Dr J. Paxton (Sydney), Dr A. N. Svetovidov (Leningrad), Dr E. Tortonese (Genoa) and Dr L. Woods (Chicago).

The junior author expresses his gratitude to Dr S. Khera of the Zoological Survey of India for encouragement and facilities.

The biographical portion of this study frequently shows Albert Günther in an unfavourable light and we are, therefore, all the more grateful to his grandson, Mr A. E. Gunther, for a most detailed and fair criticism of the text, from which many corrections to facts and emphasis were made.

SOURCES

An outline of Day's career is given in the *Dictionary of National Biography* (Suppl. 2 : 122) and in his obituaries, especially those in *Nature* (1889 : 282) and the

Cheltenham Examiner (17 July 1889); others listed by Dean (1916). Dates of promotion and a note of Day's major publications are given by Crawford (1914, 1930) and his regimental postings appear twice yearly in the *East-India Register and Army List* (after 1861, *Indian Army and Civil Service List*) and in the *Madras Army List*.

The early part of Day's career was in Madras Presidency and information on his activities (*Fishes of Malabar*, trout experiment, etc.) is given in the *Proceedings of the Madras Government, Public Department* and *Revenue Department*, of which many relevant extracts are in the Cheltenham scrapbook Q 654 (see below). Later (from about 1869) his affairs were reported in the *Government of India, Proceedings of the Public Works Department, Irrigation*, of which some extracts, including fishery reports, are in the Cheltenham scrapbook Q 658.

A third printed source is the minutes, memoranda, etc., in the *Government of India, Proceedings of the Department of Agriculture, Revenue and Commerce* (*Fisheries Section*) (i.e. letters from India to the India Office – IOR.L/E/3/82–85, etc.). The *Proceedings* contain, *inter alia*, Day's recommendations for fishery policy, his reports on regional fisheries and the reactions of the authorities, correspondence relating to his appointment as Inspector-General of Fisheries, the production of his *Fishes of India*, and his release from other duties to work on fishes and to write the book. A second part of these *Proceedings*, which appeared monthly, is headed *Abstract Tabular Statement* (*Part B*) and here are listed briefly routine matters that did not merit full publication. Among the latter are Day's requests for compassionate leave. A parallel series of official documents is the *Revenue Dispatches to India* (*Original Drafts*) (i.e. letters from the India Office to the Government of India – IOR.L/E/3/479–499, etc.). These *Dispatches* complement the *Proceedings* and contain occasional references to Day, including some pertinent remarks on the cost of producing the *Fishes of India* (see below, p. 52).

Albert Günther plays a leading role in this story. His son, the historian of science R. T. Gunther, published a calendar of his father's scientific works and a short biography, as well as a list of his obituaries (Gunther, 1930). However, the senior author was greatly privileged to read in typescript a biography of Albert Günther (and also of J. E. Gray) by his grandson A. E. Gunther (since published, Gunther, 1975). The latter sorted and dispatched his grandfather's letters and manuscripts to the British Museum (Natural History) in 1969 and these have been of the greatest use in the present study.

The manuscript sources relating to Day's life and work are scattered and what would prove of the greatest value, Day's probably large personal correspondence, has not been found (if it still exists). One can only be grateful for what has survived, and especially those pieces of paper on which Day drafted his letters (and expressed by a cancelled line or sentence what prudence later forced him to omit). All too often families, as well as libraries who should know better, destroy such documents; the present study shows how much of interest can be deciphered from 'worthless scraps'.

The following collections containing letters or other manuscript material have been used.

a. *Cheltenham*

After his death, Day's two unmarried daughters presented his natural history library to the Cheltenham Public Library (see below). About twelve hundred books were included, of which certain items comprise letters, manuscripts, proofs, notebooks and annotated newspaper cuttings. The following 22 items, listed under their Cheltenham library number, have biographical or bibliographical interest.

Q 61. Buckland, F. T. 1863. *Fish hatching.* London, 268 pp. Copy presented to Francis Day by Frank Buckland, with dedication (see p. 34) ; also, 2 sheets inserted, notes by Day on trout egg collecting (see p. 34).

Q 139. Beavan, R. 1877. *Handbook of the freshwater fishes of India.* London, 247 pp. Letter pasted in, to Day from Brisbane Neill, 24 July 1877 (see p. 100), and many pencil annotations by Day.

Q 236. Günther, A. C. L. G. *Catalogue of the fishes in the British Museum*, 8 vols, 1859–70. Many annotations.

Q 481. *Fishes of India – Sykes – M'Clelland.* Bound volume of 2 reprints, Sykes, 1838, on the fishes of the Deccan and M'Clelland, 1838, on Indian cyprinid fishes ; pencilled titles on flysheet and title page ; note on Sykes and an obituary from *The Overland Mail*, 21 June 1872 ; some annotations, one long note (illegible) and letter to Day from Achilles, 19 August (? July) 1877 (see p. 55) ; some figures on a few of the Sykes plates coloured (? by Day).

Q 483. *British fish – Couch, Young, Day, Gill 1822–85.* Bound volume of reprints containing a paper each by Couch, Young and Day ; also, 2 reviews by Gill of Günther's *Introduction to the study of fishes* (1880), the first a reprint from *Forest and Stream*, the second from *The Nation*, followed by MS. of 6 pages entitled 'A tew remarks upon Günther's Introduction to the study of fishes by F Day' (see p. 69).

Q 498. Hamilton-Buchanan, F. 1822. *Fishes of the Ganges.* A number of annotations in pencil ; also, loose sheet at p. 282 concerning finrays in *Cyprinus bata* and a pencil note at p. 308, repeated on inside of back cover, 'He considering as two distinct rays what I call one divided to the root' (see p. 67).

Q 566. Bundle of loose newspaper cuttings on a variety of topics (some being on pages torn from Q 650) and some letters.

Q 602. Day, F. 1865. *The fishes of Malabar.* Proof copy, interleaved, with many notes and corrections, but incomplete (pp. 39–110 missing, also p. 223 onwards, but with Index).

Q 617. Günther, A. C. L. G. & Playfair, L. 1867. *The fishes of Zanzibar.* A number of annotations (see p. 76).

Q 646. [missing] *health of armies and medical geography. M. Boudin.* MS. by Day, translation from the French ; flysheet 'Francis Day April 10th 1858 Basingstoke Hants' ; title page 'Statistics of health & mortality of land and sea armies . . . by J.-Ch. Boudin . . . 1846. Translated by Francis Day Madras Army', 100 folios ; then, 'Essays on medical geography especially in the question of pathological antagonism. By J.-Ch. Boudin . . . translated by Francis Day Madras Army', 26 folios (ending in mid-sentence).

Q 647. *Medical geology and Crimean War.* MS. by Day, translation from the French ; flysheet 'Francis Day April 20th 1858 Basingstoke Hants' and 'Essays on Medical Geology . . . by J.-Ch. M. Boudin . . . Translated by Francis Day Madras Army', 55 folios, complete with Index.

Q 648. MS., *Journal of natural history* : *being the result of my own observations, or derived from living Testimony*, vols 11 and 12, by Jonathan Couch, published in *Land and Water.*

Q 649. MS., *British stalk-eyed crustacea, decapod Brachyura or short-tailed crabs* (very incomplete after first few pages).

Q 650. *Fishes*, 6 vols, originally notes on Malabar fishes, but with newspaper cuttings often pasted in over the notes.

1. *Fishes of Cochin/Being/a catalogue of the/Collection of/Asst. Surgeon F. Day F.L.S., F.Z.S. &c./late Civil Surgeon of Cochin & /Medical Officer to H.H. the Rajah of Cochin/Cheltenham 1864.* Descriptions of fishes, including measurements, but many cuttings added later ; 75 species in Table of Contents.
2. Same title but now 'Civil Surgeon' (i.e. written after 14 December 1864). As above ; 48 species in Table of Contents.
3. No title. Notes only ; 20 species listed.
4. No title. Cuttings (mostly salmonids) and notes (mostly cyprinids) ; no list of species.
5. No title. Notes on Indian fishes, including clupeoids and eels ; no list of species. Book reversed and begun again with the title 'Fish evolution by Francis Day'. Notes on this and on Sea Fisheries of India.
6. No title. Notes, memoranda, book references, etc.

Q 651. *A tour through some of the Indian fisheries.* Proofs pasted into notebook. Printed label inside cover 'Dr F. Day Care of Rev. F. Stockdale, Haven Street, Ryde, Isle of Wight.'

Q 652. Plates (40, but some duplicated) from Day's *Fishes of Great Britain and Ireland.* On fly sheet 'Francis Day, Calcutta Aug^{t} 19th 1871' (ink) and printed label 'D^{r} F. Day, Oakfield, Simla.'

Q 653. Notes, letters and newspaper cuttings on British salmonids, 3 vols. Includes 3 letters from James Youl (1865–66), other letters (Hadow, Maitland, Thompson) and details of the cost and profit of his salmonid book.

Q 654. *Letters, Papers, and observations relative to/The Fishes of Malabar/The Trout Experiment & /The Introduction of fish on the Neilgherries/*F. Day 1867./ *England, Neilgherries, Kurnool & Madras.* Book containing letters and miscellaneous notes, including a list of ichthyological books (? bought) and their prices in 1864–65 (Bleeker's *Atlas*, 4 vols less one part, £15 : 8 : 6, Cuvier & Valenciennes, 12 vols, £12 : 12 : 0).

Q 655. Notes on British fishes and some letters (e.g. Vinciguerra in 1881, J. W. Clarke in 1883).

Q 656. Book of newspaper cuttings on salmon, trout and angling. On flysheet 'Francis Day Feb. 22nd 1885.'

Q 658. Notes, cuttings, letters on fisheries of India, including parts of the *Proceedings of the Madras Government, Revenue Dept.* for 1864–71. Label 'Dr F. Day 98 Great Russell St. W.C.'

Q 659. Notes for Day's account of the cholera epidemic at Kurnool, including a number of letters, newspaper cuttings, etc.

b. *Linnean Society, London*

A number of Day's reprints and scrapbooks of newspaper cuttings were evidently bound into volumes by Day at several times during his career and 13 volumes are now in the Linnean Society's Library. Since these were not part of Day's library given by his daughters to Cheltenham, it is possible that Day himself sent them to the Linnean Society, although the final volume includes a paper of 1889.

These papers are of great interest because they contain marginal notes, interleaved MS. descriptions, indications of Day's movements, and one important letter (from Richard Bliss to Day in the second volume listed here). The newspaper cuttings, chiefly on British fishes, may supplement those in the Cheltenham notebooks and are certainly more orderly.

LS. 1. *Fishes of India Blyth 1858–60 Day 1867–69.* Contains 7 reprints by Edward Blyth (with MS. index of new species and genera), 12 reprints by Day (with MS. index of species to year and page number), letter B. Boake to Volkard, 5 June 1867, on air-breathing fishes, and a newspaper cutting on Day's 'accidents' in Burma. Printed label inside cover 'Dr F. Day, 98, Great Russell Street, W.C.'

LS. 2. *Fishes of India 1870–72 Day.* Contains 19 reprints by Day and letter Richard Bliss to Day, 22 July 1872, requesting types for Agassiz at Harvard and commenting on Günther's behaviour. Printed label inside cover 'Dr F. Day, Oakfield, Simla.'

LS. 3. *Fishes of India &c. 1873–80 Day.* Contains 29 reprints by Day and letter B. Boake to Day, 28 July 1881.

LS. 4–6. *Papers on fish 1876–84* [and *1882–87, 1884–89*] *Day.* Contain 19, 12 and 4 reprints by Day.

LS. 7–13. *Fishes of Great Britain 1879–81* [and *1881–83, 1884, 1885, 1886, 1887, 1888*] *Day.* Contain chiefly newspaper cuttings (*Field, Land and Water, Fishing Gazette, Cheltenham Examiner*, etc.), including Day's publication of the Couch journals (Q 648), as well as some reprints by Day. Volumes 9 and 10 bound by a Cheltenham firm.

Four further volumes of Day's reprints, bound differently, are in the same library ; they contain no annotations and are papers evidently sent to the Society and bound up subsequently.

c. *British Museum (Natural History), London*

Documents and letters have not yet been brought together as a single collection, some being held by the Departments and others by the General Library. The following have been used.

1. Letter Books in Zoological Department (bound, arranged by year, alphabetical), containing 174 letters from Day to Günther (or one to Flower) from 1865 to 1889.
2. Günther collection of letters in General Library, in boxes arranged by subject. There are 38 letters relating to Day in Box 15 and other relevant material was found in Box 2 (Günther–Murie), Box 16 (Günther–Peters and Günther–Sclater), Box 3 (Günther's official diary) and Box 24 (Günther's book on British fishes).
3. Reports & Minutes (variously titled) in Zoology Department Library, seven bound volumes (not numbered), from 1828 to 1874, dealing with administrative matters (indexed). O'Shaughnessy affair in 6th and 7th volumes.
4. *Official Documents*, continuation of the above from 1875 to 1906 (20 bound volumes, indexed) and 1909 to 1921 (18 boxes, loose). From 1896 to 1919 there is a second series, *Official Documents, Vertebrata*, 4 bound volumes.
5. Miscellaneous Departmental Documents, part of the above two in subject matter, 2 volumes (bound and indexed), 1857 to 1889 and 1888 to 1895.
6. India Museum documents in Zoological Department Library, 4 bound volumes dealing with zoological specimens (see below, p. 118).
7. Two notebooks in Fish Section library, covering the period 22 December 1864 to 19 July 1870 and October 1872 to 28 March 1883, give lists of specimens from the Spirit Room required by visitors, sometimes written out by the visitor himself (Day on 17 June and 19 July 1870 ; possibly also 18 May and two days the following week).

d. *Zoological Society, London*

A single letter from Day (Madras, 28 July 1867) in the general collection and another (Day to F. Moore, 2 January 1865) in the Gladstone Collection of Autographs. Four volumes of fish drawings (see p. 109). There are 14 letters from Günther, none relevant to our study. In 1889 Day presented 6 bound volumes of reprints and cuttings, including many of his medical papers :

1. *Day's papers – vol. 1 Medicine – 1854–78.* On flysheet in ink 'Francis Day Cochin July 1861' and in pencil (? by Day) 'These papers are reprints from the Indian Annals'. Thirteen medical papers : 1856–60 – *Indian Annals of Medical Science, 1860–68 – Madras Quarterly Journal of Medical Science*, ? 1878 – *Cheltenham Natural Science Society*. All are separately re-paged.
2. *Day's papers – vol. 2 Salmonidae – 1878–88.* Carefully pasted salmonid cuttings (*Land and Water*).
3. *Day's papers – vol. 3 Fishes – 1881–88.* Many cuttings or proofs from *The Field*.
4. *Day's papers – vol. 4 Fishes – 1881–88.* More cuttings, including those dealing with the Couch journals.
5. *Day's papers – vol. 5 Fishes – 1865–71.* Reprints, including those on the Cochin fishes and the report on pisciculture in the Nilgiris.
6. *Day's papers – vol. 6 Fishes – 1871–88.* Reprints, including many later papers on British fishes.

e. *Zoologisches Museum, Berlin*

A collection of 45 letters (1872–87) from Day to Wilhelm Peters (3 to Eduard von Martens, a few to Franz Hilgendorf), 2 letters from Arthur O'Shaughnessy to Peters, and a number of letters from Günther to Peters; photocopies of the Day and O'Shaughnessy letters now in the British Museum (Natural History).

f. *Rijksmuseum van Natuurlijke Historie, Leiden*

One letter from Day to Hermann Schlegel and two to Ambrosius Hubrecht, all of 1879. Recently, some of Pieter Bleeker's correspondence has been found in the archives of the museum, including a number of letters from Günther, 13 letters from Day (1865 and 1875–77), an important letter from Brisbane Neill to Bleeker (see p. 32 below), and a letter from G. E. Dobson that mentions Day (9 June 1875).

g. *University Museum of Zoology, Cambridge*

A letter from Day to Alfred Newton and one probably to J. W. Clarke, both of November 1888, in the letterbook headed *Museum of Zoology History of the Collection Vol. II 1871–1891.*

h. *Naturhistorisches Museum, Vienna*

Only 4 letters from Day have been found, all addressed to Franz Steindachner (1877, except one undated).

i. *Muséum National d'Histoire Naturelle, Paris*

A letter from Day to Léon Vaillant of 1 March 1875.

j. *Somerset House, London*

A copy of Day's Will is filed in Vol. 14 for 1889; it was drawn up on 19 February 1889 and Probate was granted on 2 August of that year.

Records of births, marriages and deaths have also been consulted. Formerly in Somerset House, these are now at the General Register Office, St Catherine's House, London.

k. *Egerton family*

A number of items of scientific and biographical interest are in the possession of the Egerton family (possibly including legacies mentioned in the Will of Fanny Laura, Day's eldest daughter). The following are of special interest.

1. MS. journal, bound, written by Emma, Day's first wife, between 18 July and 23 August at Ootacamund (see below, p. 91).
2. Small notebook, written by Reginald Francis Egerton, Day's grandson, including synopsis of letter about the Day family home, Hadlow House, from Mabel Beaumont, daughter of Day's sister Mary.
3. 'Research report in the matter of Dr Francis Day – ref. 16/116 compiled by W & A Mussett *Lincoln's Inn Heraldic Studios*', 32 pp. MS. compilation of biographical data on Day and the Day family (written about 1921).

4. Two family trees, one taken from the other but with new information added, tracing the Days back to about 1600.
5. Notebook containing obituaries of Day, including portrait published in *The Graphic* and a letter to Day from Sir James Maitland ; also, newspaper cuttings, letters and portrait of John Campbell Egerton, Day's son-in-law.
6. Letter, Alice Catharine Day Anderson (Day's sister) to Reginald Francis Egerton, 20 June 1928, concerning her Will.
7. Letter, 'Aunt H. Covey' to Edith Mary (Day's youngest daughter), 30 June 1902, concerning family health.
8. Two receipts, 26 February and 18 March 1889, from Zoological Society for 88 and 146 drawings of fishes sent by Day.
9. Three photographs and a portrait of Day (see below, p. 20).
10. Three silver medals (Société d'Acclimatation, 1872 ; National Fisheries Exhibition, 1881 ; International Fisheries Exhibition, Edinburgh, 1882).
11. Day, F. 1873. *Report on the sea-fish and fisheries of India and Burma*, Calcutta, 332 pp. Two copies, one interleaved and used for compiling the text and plates for the *Fishes of India* (see below, p. 48) ; also, notes on flysheet and following page refer to Ford (see below, p. 54), Günther (see p. 103), Bleeker (see p. 112). and Jerdon (see p. 49).
12. Day, F. 1875–78. *The fishes of India*, London, 2 vols. Two copies, one interleaved with plain pages and plates, bound in four volumes, annotated and used for preparation of projected 2nd edition (see below, p. 58).
13. Day, F. 1873. *Report on the freshwater fish and fisheries of India and Burma*, Calcutta, 307 pp.
14. 'Day on fishes.' Ten of Day's reprints, 1865–67, including *Fishes of Cochin*, bound with 23 figures (13 coloured by Day – see below, p. 111), some annotations, also MS. list headed 'Lepidoptera collected in the Neilgherries by F. Day Esq.' giving 81 species and signed 'F. Moore London July 1868' and a second list headed 'New species from March 1867' giving 46 fish species, each with a page number (between 284 and 940) ; also, newspaper cuttings concerning Day's fishery reports.
15. 'Miscellaneous papers Francis Day.' Set of 59 reprints, *Proc. zool. Soc.*, *Linn. Soc. Lond.*, *Ann. Mag. nat. Hist.*, *Asiatic Soc. Bengal*, final paper *Proc. Cotteswold Club* (1889), also medical paper ; no annotations.
16. Loose reprints (10 by Day), including Day, A. C. 1892. *The Diocesan 'Waterbaby' or shall the 'Evangeline' be given up ?* (Missionary tract by Day's sister Alice – see Appendix, p. 163).
17. 'Miscellaneous papers – F. Day.' Set of 5 reprints, 1868–86, including one on the races of Malabar (*Chelt. nat. Sci. Soc.*, 1886) ; no annotations.
18. 'Tropical fevers by Francis Day, FLS.' Second copy of proof, much corrected and altered, of one of his medical papers (see below, p. 87) ; in ink on final page 'Finished Copying July 25th 1861.'
19. Day, F. 1883. *Fish culture*, from International Fisheries Exhibition, London, 105 pp. Interleaved, with newspaper cuttings from *Land and Water*, 1883–84.

20. Day, F. 1884. *The commercial sea fishes of Great Britain.* London, 328 pp. Prize essay for International Fisheries Exhibition, 1883.
21. Day, F. 1865. *The fishes of Malabar,* London. Two copies, both with coloured plates, identical bindings (spine leather, tooled, with small design of fish in gold repeated five times) ; receipt in one copy '1876 Dr F Day
April 27 To J Revell
Binding Book – 10s : 0d'
22. Day, F. 1887. *British and Irish Salmonidae,* London. Contains letter J. Broughton to Day, 2 May 1868, on gelatin content of swimbladder of *Otolithus ruber.*
23. Day, F. 1863. *The Land of the Permauls.* Title page inscribed 'Emma Day Cochin June 14th 1863'.
24. Day, F. 1889. *The Fauna of British India, Fishes,* 2 vols.
25. Herbert, D. (ed.). 1883. *Fish and fisheries. A selection from the prize essays of the International Fisheries Exhibition, Edinburgh, 1882,* Edinburgh, 352 pp.
26. Chelius, J. M. 1847. *A system of surgery* (English translation by J. F. South), London, 2 vols. Front cover stamped in gold 'St George's Hospital Medical School Mr Francis Day Clinical Surgery Prize Session 1850–1 Presented by Sir Benj[n] C. Brodie Bart.' (part of Day collection originally but evidently sold ; discovered in bookshop in 1966).
27. *Amtliche Berichte über die Internationale Fischerei-Ausstellung zu Berlin,* 1880. Elaborate binding, in ink (by Day) on title page 'Francis Day from Professor Peters'.
28. Day, W. A. 1867. *The Russian Government in Poland with a narrative of the Polish insurrection of 1863.* London, 333 pp. On flysheet 'Alice Catharine Day From her affectionate Brother William Ansell Day 10th December 1866'.
29. Five books on India, evidently bought by Day in the period 1860–63 while in Cochin (signatures on all but one).

l. *India Office Records, London*

Three letters from Day have been found among the Minute Papers in the series *Statistics & Commerce, Home Correspondence* (L/E/2/80 and 83, both volumes dealing with 1879) ; the letters are attached to Minutes No. 4817 and No. 5258 and deal with specimens sent to the India Museum (see p. 120) ; information on this museum is scattered through the volumes of this series, and L/E/2/52 is especially important for details of the transfer of the museum to South Kensington (see p. 118).

We have failed to find any letters from Day in India in spite of personal searches in the libraries of the Zoological Survey of India, the Asiatic Society of Bengal and the Indian Museum, all in Calcutta. However, the manuscripts of the Asiatic Society form an enormous collection and much interesting material will probably come to light when properly sorted and catalogued. The Government Museum,

Madras, was also unable to find any letters relating to Day or any specimens presented by him. Thus, for the twenty years that Day spent in India we have been forced to rely on official documents or letters preserved by museums or libraries in Europe.

Abbreviations

For convenience, the following abbreviations have been used when citing manuscript, anonymous or documentary material.

ASB.Proc.	*Proceedings of the Asiatic Society of Bengal*, manuscript records of general or Council matters, election of new members, etc.
BMNH.MS.Doc.	*Official Documents*, Zoology Department, British Museum (Natural History), bound and numbered volumes, 1875 onwards (see above, p. 12).
BMNH.MS.F.	Two notebooks in Fish Section, Zoology Department, British Museum (Natural History), which list specimens in Spirit Room requested by visitors, 1864–83 (incomplete ; also letter Gray to Günther – see p. 72).
BMNH.MS.G.	Günther Collection of letters, etc., General Library, British Museum (Natural History), Box 2 (letters M–R), Box 3 (Günther's diary), Box 15 (Day), Box 16 (Peters and Sclater), Box 24 (British fishes).
BMNH.MS.Misc.	Miscellaneous Departmental Documents, Zoology Department, British Museum (Natural History), two bound volumes, 1857–95 (see above, p. 12).
BMNH.MS.Rep.	Reports & Minutes, Zoology Department, British Museum (Natural History), seven volumes bound but not numbered, 1828–74 (see above, p. 12).
BMNH.MS.Z.	Letter Books, Zoology Department, British Museum (Natural History), volumes bound by year, alphabetical ; also *Documents of the India Museum* (see p. 12).
CE.	The *Cheltenham Examiner*, newspaper, 17 July 1889 (Day's obituary) and and 8 January 1890 (gift of Day's library).
CFP.	*Cheltenham Free Press*, newspaper, 13 July 1889 (Day's obituary).
DNB.	*Dictionary of National Biography*, Supp. 2 : 122 (1903), written by B. B. Woodward.
Eg. 1–29	Books, reprints, manuscripts, etc. in the possession of the Egerton family (listed, p. 13).
EIRA.	*East India Register and Army List* (after 1861, IACSL.), with index, two parts per year.
ER.	*Ecclesiastical Returns*, IOR. N/2/42,48,50 (1862,7,9) (baptisms and burials in Madras Presidency).
FM.	*Fishes of Malabar* (proof copy, Q 602).
FRMMF.	*Family Register of the Madras Medical Fund*, IOR. L/AG/23/9/3 (marriage of Edith Day, etc.) (not available for consultation).
GI.DARC.Proc.	*Government of India, Proceedings of the Department of Agriculture, Revenue and Commerce* (*Fisheries Section*), IOR. L/E/3/82–85, etc. (letters from India to the India Office). Also, *Abstract Tabular Statement* (*Part B*).
GI.PWD.Proc.	*Government of India, Proceedings of the Public Works Department, Irrigation* (relevant parts and Day's fishery reports in Q 658).
GRO.	General Register Office, St Catherine's House, London (births, marriages and deaths).
HCL.	Hampshire County Library.
IACSL.	*Indian Army Civil Service List* (before 1861, EIRA.), with index.
IOR.	India Office Records (and Library), London.
LPR.	*Leave Pay Records*, IOR. L/AG/20/6/22, also 32, 33 (Day's periods of leave).

LS. 1–13	Linnean Society, London, 13 volumes of Day's reprints, cuttings, etc.; also proposal form.
LSRSD.	The Law Society, London, Records and Statistical Department.
MAL.	*Madras Army List*, with index, four parts per year.
MB.	*Madras Burials*, IOR. Z/N/2/D7.
MGPD.Proc.	*Proceedings of the Madras Government, Public Department* (relevant cuttings in Q 654, Q 658), IOR.
MGRD.Proc.	*Proceedings of the Madras Government, Revenue Department*, IOR.
MMFPPB.	*Madras Medical Fund Pension Pay Books*, IOR. L/AG/29/29/6 etc. (pension to Day's daughters, marriage, death).
MNHN.MS.	Muséum National d'Histoire Naturelle, Paris (letter from Day to Léon Vaillant).
NMV.MS.	Naturhistorisches Museum, Vienna (letters from Day).
Q 61–659	Cheltenham Public Library, Cheltenham (Day manuscripts, etc.).
RDI.	*Revenue Dispatches to India* (*Original Drafts*), IOR. L/E/3/479–499, etc. (letters, etc., from the India Office to the Government of India – see GI. DARC.Proc. above).
RMNH.MS.	Rijksmuseum van Natuurlijke Historie, Leiden (letters from Day).
SCHC.	*Statistics & Commerce, Home Correspondence*, IOR. L/E/2/50, also 52, 56, 80 and 83, containing Minute Papers 113–250, also 251–400, 900–1061, 4801–4950, and 5251–5352 for the years 1874–76 and 1879.
SH.	Somerset House, London (Wills).
TIF.	Day's *A tour through the fisheries of India*, published in 19 parts in 1870 – *Land and Water*, **10**: 55, 63, 79, 111, 149, 167, 183, 200, 218, 237, 254, 274, 290, 308, 327, 348, 367, 388, 408 (letters from Buckland (p. 5), Col. Haly (p. 203) and Fair Play (p. 310); the journal edited by Frank Buckland).
W.FD.	Francis Day's Will – copy at Somerset House.
W.FLD.	Fanny Laura Charlotte Day's Will – Winterbotham, Gurney, solicitors, Cheltenham.
ZMB.MS.	Zoologisches Museum, Berlin (letters from Day, also Günther and O'Shaughnessy).
ZMC.MS.	University Museum of Zoology, Cambridge.
ZSL. 1–6	Zoological Society of London, library (Day letters, reprints, etc.).

Principal events in the life of Francis Day

1829	Born (2 Mar.), Maresfield, Sussex
1838–43	Educated at Shrewsbury School
1849	Enrolled at St George's Hospital, London ; death of father
1851	MRCS
1852	To **India** ; Asst. Surgeon, Madras Establ. ; 2nd Burmese War
1853–56	Attached to various regiments ; at Mercara (Jan. 1855), Bangalore (May 1855) and Hyderabad (1856) ; death of brother Edmund (1853) ; published on tropical fevers (1856)
1857	To **England** (12 months' sick leave from Feb.) ; lived at Hampstead, London ; elected to Linnean Society ; married Emma Covey (Nov.)
1858–63	To **India** (Hyderabad, arrived Jun. 1858) ; further medical papers (1858–61) ; Civil Surgeon at Cochin (1859) ; death of brother Charles (1860) ; death of father-in-law (Aug. 1861) ; birth of daughter Fanny Laura (Nov. 1861) ; studied and drew Cochin fishes ; survey of Nilgiri Hills (May 1863) ; published *Land of the Permauls* (1863, ? Jun.)
1864	To **England** (12 months' sick leave from Feb.) ; lived at East Sheen, London ; birth of son Francis Meredith (Apr.) ; moved to Cheltenham (Oct.) ; extension of sick leave (effectively for 12 months)
1865	*Fishes of Cochin* presented at Zoological Society meetings (Jan., Mar.) ; disputes with Günther over *Catopra* (Jan., Feb.) ; moved to Isle of Wight (Oct.) ; *Fishes of Malabar* published (? Dec.)
1866	Collected trout eggs for Nilgiris with Buckland (Jan.)
	To **India** (Feb. ; Ootacamund in Mar.) ; trout experiment failed (Apr.) and fish stocking experiment begun (May) ; appointed Medical Store Keeper, Madras (May, not taken up) ; moved to Kurnool (Aug.) ; moved to Madras (Nov.)
1867	Appointed Professor of Materia Medica (May) ; privilege leave (Jul., Aug. – to Ootacamund) ; published on cholera, also on trout and stocking experiments ; birth of daughter Edith Mary (Oct.)
1868	Fishery surveys to south (Jun.) and to north (Sept.) of Madras and in Orissa (Dec., Jan.) ; papers on Nilgiri experiments and catalogue of Indian freshwater fishes ; criticisms by Günther in *Zoological Record* ; specimens sent to British Museum
1869	On 'special duty' to inspect fisheries (Mar.) ; to Calcutta, elected Fellow of Royal Asiatic Society (Apr.) ; fishery survey of Burma (May–Sept.) ; death of his wife Emma ; fishery survey of Andaman Islands (Dec., Jan.) ; papers on new fishes, fishery reports ; strong criticisms by Günther in *Zoological Record* ; large work on Indian fishes planned

Principal events in the life of Francis Day (Cont.)

1870	To **England** (10 months' sick leave from Mar.) ; visited Günther at British Museum
	To **India** (Sept., recalled 5 months early)
1871	Appointed Inspector-General of Fisheries (Jul.) ; fishery surveys in northern India (Ganges, Jumna, Indus tributaries, Sind, Beluchistan) ; papers on new fishes and report on freshwater fish and fisheries ; dispute with Günther in *Proceedings* of Zoological Society ; lived at Calcutta, also perhaps Simla ; promoted Surgeon-Major (Dec.)
1872	To **England** (3 months' leave, Mar.–May) ; married Emily Sheepshanks (Apr.) ; silver medal, Société d'Acclimatation
	To **India** (May) ; lived at Simla, also perhaps Calcutta ; further surveys and papers, including account of marine fish and fisheries of India
1873	Death of his second wife Emily ; application for 2 years' leave to write *Fishes of India* (Oct.)
1874	To **England** (May) ; lived at Richmond, London ; frequent visits to British Museum ; complaints to Owen about Günther (Aug.) ; Ford to illustrate *Fishes of India* (Nov.) ; Peters' complaints about Günther (Dec.)
1875	Visits to Berlin, Paris (Jan., Feb.) and The Hague, Leiden, Berlin and Paris (May, Jun.) ; *Fishes of India*, pt 1 published (Aug.) ; offers type collection to British Museum (refused)
1876	Moved to Cheltenham (Feb.) ; type collection bought by Indian Museum ; 6 months' extension of leave (May) ; death of Ford (July) ; *Fishes of India*, pt 2 published (Aug.) ; retired (Nov.)
1877–80	*Fishes of India*, pt 3 published (Aug. 1877) and pt 4 (Dec. 1878) ; quarrel with Günther over Mintern (Aug. 1880) ; *Fishes of Great Britain*, pt 1 published (1880) ; death of Buckland (Dec. 1880)
1881–85	*Fishes of Great Britain*, pts 2–4 published (1881–84) ; Great International Fisheries Exhibition, London (1883) ; No. 2 fish collection to Sydney ; CIE (1885)
1886–88	Death of brother William (1886) ; *British and Irish Salmonidae* published (1887) ; Supplement to *Fishes of India* published (Oct. 1888) ; Hon. Ll.D. Edinburgh (1888) ; part of fish collection to British Museum (1888, ? Dec.) and Indian bird skins to Cambridge
1889	Drawings of fishes to Zoological Society (Feb., Mar.) ; fishes and crustaceans to British Museum ; proofs of *Fauna of India – Fishes* part corrected ; died (10 Jul.) at Cheltenham.

BIOGRAPHICAL SKETCH

As yet, there is no full biography of Francis Day. The sources cited here are inadequate, being almost wholly concerned with his military career and ichthyological work and affording only tantalizing glimpses of his other activities. The documents available are sometimes neatly arranged, as for example the letters in London and Berlin, but more often information has had to be painstakingly deciphered from disordered scraps, notes and undated drafts in which Day's usually legible hand has trailed away into a miserable scrawl. Nevertheless, even a biographical sketch has seemed worthwhile, concentrating on the period leading up to the publication of the *Fishes of India* ; his work on British fishes has been largely omitted, although full of interest.

In the hope that a more complete biography of Day will eventually be written, we have tried (at the risk of disrupting the text) to facilitate retrieval of the present scattered data by giving a source for all statements made (abbreviations, p. 16), although this will not eliminate tedious searches through some of the Cheltenham material, where manuscripts are unnumbered and sometimes merely thrust between unpaged leaves of scrapbooks, rarely in chronological order.

Five portraits of Day have come to light, all in the possession of the Egerton family (descendants of Day's daughter Edith Mary). The first is a photograph from the Royal Photographic Studio of Mr Jabez Hughes of Ryde (Isle of Wight) and thus taken between October 1865 and February 1866 (Pl. 1 left). It shows at all and rather lean man in dress uniform, the eyes deep-set, eyebrows strong (slightly retouched), forehead high, lips full and serious, the upper with a moustache, nose fine and a little pointed, with long nostrils, chin round and firm. The second portrait, an engraving reproduced from *The Graphic* (undated obituary, Eg. 5), is stated to be taken from a photograph by Messrs Maull & Fox of 187A Piccadilly and shows Day in his late forties (Pl. 1 right). Two further photographs (Pl. 2) were taken in Cheltenham by Dighton's Art Studio (Weston Villa, opposite the Bellevue), apparently then run by Ernest E. White, and they show Day towards the end of his life, the hair grey or white but little thinned, the jaw and cheeks now heavy. Finally, there is a portrait in oils possibly the one mentioned in the Will of Day's daughter Fanny Laura. It is signed J. C. Egerton 1893 and was thus painted by Day's son-in-law after Day's death, probably from a photograph. It shows Day in perhaps his late forties wearing the dress uniform of the Medical Service (scarlet tunic, gold epaulettes, etc. ; see Crawford, 1914 : 250 for description).

Early years 1829–51

The *Dictionary of National Biography*, usually a reliable guide, states that Francis Day was 'the third son of William Day of Hadlow House, Maresfield, Sussex, by his wife Ann Le Blanc and he was born there on 2 March 1829'. In fact, this is not strictly accurate. Hadlow House was in Mayfield Parish (now Hadlow Down Parish) and the family apparently did not move to Hadlow House from Maresfield until after 1833, when Francis Day was four or five years old. His mother is elsewhere given as Ann Elliott (e.g. by Venn, 1944–54), but we have not been able to settle this point (see Appendix for further sources and details of the family).

The Days were a land-owning Sussex family. According to Francis Day's sister Alice, the family estate at the time of his boyhood comprised some two thousand acres around Maresfield (Maresfield, Hadlow Down, Rotherfield and Framfield), with about forty tenant farmers (Day, A., 1928). Hadlow House itself, now split into four separate dwellings, is a large and fairly imposing building that suggests that the Days were probably among the more prosperous members of the Sussex squirarchy. However, Francis Day's grandfather, William Day, was not a farmer but after some years in a draper's business in London turned his energies to painting and the study of rocks and minerals (Egerton, 1970). Day's father was also a keen amateur geologist (Day, A., 1928) but, at least from the time that he inherited Hadlow House, was a full-time farmer.

Day had two older brothers, William Ansell (b. 1826) and Edmund (b. 1828), two younger brothers, Henry George (b. 1830) and Charles Thomas (b. 1833), and two younger sisters, Mary Ann (b. 1841) and Alice Catharine (b. 1849) ; in addition, there were two older half-sisters, Caroline (b. ? 1821) and Eleanor (b. 1823) from his father's first marriage. None took up farming, but the interest in geology continued, Edmund studying as a mining engineer and Henry apparently helping Adam Sedgewick in the arrangement of the geological museum in Cambridge (Day, A., 1928). Thus, an interest in at least one branch of the natural sciences was very clearly established in the family.

Day was sent to Shrewsbury, where his brothers William and Henry were also educated, and there his first leaning to natural history 'shewed itself in boyish observations on the habits of fish, and in some of his papers, in later life, reference is made to them. When home for his holidays much of his time was devoted to the study of birds and animals on his father's estate' (17 July 1889, CE.).

In September 1848 Day was enrolled at St George's Hospital in London to begin a medical career (Burgess, 1967 : 48). It is difficult to say whether this stemmed from a real desire to study medicine, or whether it was a second choice in view of the lack of professional opportunities in natural history. Certainly, Day showed considerable interest in medical problems in the early part of his career (1855 to about 1862 – see p. 87 below) and in his investigation of the Kurnool cholera outbreak (see p. 40), but this may only have reflected his general sense of curiosity. He did, however, show promise in his medical studies and in his final year won the clinical surgery prize and was presented with a handsome leather-bound copy of J. M. Chelius's *A system of surgery* (English translation of 1847, 2 volumes – Eg. 26).

India 1852–64

After qualifying at St George's Hospital (MRCS in 1851), Day probably spent some months at home before being appointed to the Madras Establishment as Assistant Surgeon (26 February 1852 – EIRA.). Shortly after, he sailed for India in time to take part in the Second Burmese War (relief of Pegu, medal). His choice of military service may have stemmed from a desire to travel. It is possibly no more than a coincidence that the founder of Fort St George, later to be Madras, was a seventeenth-century namesake, Francis Day. However, there appears to be no

evidence connecting the two, even though Day's family can be traced back to the early 1600s (Eg. 3, 4).

Apart from brief entries in the *Army List* (EIRA.), there is very little that can be gleaned of this early part of Day's career and in particular of the birth of his interest in Indian fishes. In 1853 and 1854 he was with the 1st European Regiment of Fusiliers (Clive's old regiment), and from June of the latter year with the 3rd European Regiment. In January of the following year he went to the 27th Regiment of Native Infantry, stationed at Mercara, and in May to the 12th at Bangalore ; in 1856 he was with the 3rd Regiment once more and his station was Hyderabad, but early in 1857 he was granted sick leave, during which he married (see below, p. 86).

On 16 June 1857 Day was proposed for Fellowship of the Linnean Society, his address at that time being 7 Harrington Street North, Hampstead Road, London. He was recommended as '. . . a gentleman much attached to the study of natural history [a standard form of recommendation], especially Zoology ; having paid much attention to the Birds of India, of which he possesses much knowledge' (LS., proposal form). Those who signed the form were Thomas Horsfield (first Curator of the East India Company's Museum in London, from 1820 to 1859), John S. Gaskoin, John Forster and Robert Wright, as well as Richard Owen and J. E. Gray from the British Museum. A final name, George Pollock, was pencilled on the form but never signed ; Pollock was then Assistant Surgeon at St George's Hospital and had been a fellow student (Burgess, 1967 : 48). The form shows two interesting facts. First, Day was at that time known as an ornithologist, not an ichthyologist ; and second, that he was apparently personally known to both Richard Owen (1804–92) and John Edward Gray (1800–75) and had presumably visited the British Museum. Owen had been appointed Superintendent of the natural history Departments (Zoology, Botany, Mineralogy and Geology, the last two combined until 1857) and Gray was Keeper of Zoology. Albert Günther did not become a permanent member of the staff (Senior Assistant) until July 1862, although he began his work on arranging and cataloguing the reptile and amphibian collections in 1857 and passed on to the fish collections in 1858. Day is not listed as a donor of bird specimens to the British Museum (Sharpe, 1906), but he gave three collections to the museum at East India House in Leadenhall Street (from 1858, Museum of the India Office). These collections comprised 188 bird specimens, presented on 25 May 1857, 8 January 1858 and March 1858, the first batch being from Burma, the Nilgiris and Mysore (BMNH.MS.Z., *Documents of the India Museum*, 1 : 220). The dates suggest that Day was in England for a year's leave, and the localities show that he was interested in ornithology even in the earliest period of his Indian service, i.e. during 1852 in Burma.

Officially, Day is said to have returned to India (by the overland route) in March 1858 (LPR.), but two notebooks in Cheltenham (Q 646, 647) are inscribed 'Francis Day April 10th [also 20th] 1858 Basingstoke Hants.' The *Lancet* (Anon., 1858), after reporting Day's election to the Linnean Society, added 'The same gentleman has also been appointed by the Hon. East India Company to the medical charge of their depôt for European troops stationed at Warley' and in his articles in this journal (see p. 86) Day gave his official address as 'H.E.I.C. Depôt, Warley' until

the issue of 3 April ; in the issue of 24 April his address was '3rd Infantry, Hyderabad Contingent'. Warley, near Brentwood on the outskirts of London, was the Company's training depôt and since Day's *Lancet* articles were a summary of his work on tropical fevers, it seems likely that he was invited to lecture on this subject.

In 1858, Day returned to an India very different from the one that he had left. Eight weeks after his departure on home leave the Mutiny had broken out at Meerut and although military hostilities drew to a close shortly after his return, he came back to a European community still appalled by the massacre at Cawnpore and charged with a resentment, suspicion and often naked hatred that was to mould attitudes for many years to come. An equally important aspect of this aftermath, and one that played a significant part in Day's subsequent activities, was the transfer of power from the East India Company to the Crown in August 1858. Hitherto the administration had been shared between the President of the Board of Control for the East India Company (in England) and the Governor-General (in India) ; the Court of Directors of the Company acted as little more than an advisory council, even their old powers of patronage having been eroded by the Charter Act of 1853. In the reorganization following the Mutiny, the President was replaced by a Secretary of State (with his technical advisers in what was now the India Office in London) who came increasingly to exercise control over the Governor-General and thus over the political and financial activities of the Government of India (Thompson & Garratt, 1935 : 465). For Francis Day, whose early career was a constant battle for official sanction of his fishery schemes, the new chain of responsibilities, as well as the people concerned, were of considerable interest. On the whole, the new organization was to be more sympathetic than might have been the case during the Company's rule ; as Day noted wryly in the *Fishes of Malabar*, 'the first, if not the last, direct assistance which the Court of Directors . . . gave to Ichthyology' was the publication in 1803 of Russell's *Fishes of Coromandel*. Ahead of Day, however, was more than a decade of partial victories before he achieved his goal.

From Hyderabad, Day was moved in 1859 to Cochin, where he remained until early in 1864 and where his first tangible steps in ichthyology were made. Here he collected fishes, compiled descriptions of them in the notebooks now at Cheltenham (Q 650), drew them (from at least June 1863, see p. 111), and made a survey of the streams of the Nilgiri Hills in May 1863 with a view to the introduction of trout (Day, 1868a). In addition, he studied the fish and fisheries of the area and included descriptions of these in his book *The Land of the Permauls, or Cochin its past and present* (Day, 1863 : 487–493).

Leave 1864–66

In 1864 Day returned to England on leave (departed ? 8 February – LPR. ; in Aden by February – Day, 1865a : 17 ; on 12 months' sick leave – Q 658, LPR.). His specimens and notebooks had been sent on separately, and when these arrived he wrote up his first ichthyological paper, *The fishes of Cochin*, in which he listed 211 species, the paper being published in the *Proceedings* of the Zoological Society of London (read in two sessions, 10 January and 14 March 1865). Day had been elected Fellow of the Zoological Society probably shortly after his return to England.

Unfortunately, the Zoological Society does not have a record of the date of Day's election, nor of his sponsors, and only two of Day's letters have been preserved there. During this period he lived at Elm Lodge, East Sheen (London). He may have written to the British Museum, if not personally to Albert Günther, the previous year and one would have expected him to have called in to meet Günther.* He certainly sent specimens to the British Museum, delivered to Günther by Day's friend Andrew Brisbane Neill (1814–91), formerly of the Madras Medical Service, who wrote : 'I have just come from the Brit. Mus. where I have seen Dr. Günther and delivered your specimens to him. The so-called (as Lord Russell would say) Master confirms [? considers] *maculatus* has spines on the preoperculum and therefore is not a *N. maculatus* but is a new species which you can name . . . Günther is clearly of the opinion that the specimen 7 inches long should be presented to the B.M.' (Neill to Day, 4 January 1865, Q 654).

The first extant letter from Day to Günther, written in January 1865, begins with the more familiar 'My Dear Dr. Günther' and asks for help and advice. 'As you kindly promised to run your eye over my ichthyological papers, I take the liberty of writing to you on some points connected with *siluroids*, before I send the communication to the Zoological Society, because some of my observations appear to differ from yours, as well as in some points I should like you kindly to give me your opinion' (22 January 1865, BMNH.MS.Z.). On the face of it, this is typical of the many requests for help that Günther received from other ichthyologists, but as will be shown below, it must be seen within the context of the quarrel that had already developed between the two men. In the light of the correspondence preceding it, Day's letter appears more as a challenge than a humble plea for guidance from the 'Master'.

Throughout 1864 Day worked on two major projects, the stocking of the trout in the Nilgiri Hills and the expansion of his work on Cochin fishes into a complete book. The trout experiment fortunately had the support of the Governor of Madras, Sir William Denison, who, as Governor of Tasmania, had initiated the second attempt to transport salmon and trout eggs to the Antipodes (50 000 eggs sent out in the *Columbus* to Tasmania in 1852 – see Roughley, 1966 : 270, for history of these attempts). The project was unsuccessful, as had been that of Captain F. Chalmers eleven years earlier, the eggs hatching and dying *en route*. The solution to the problem was the discovery by James Youl that eyed ova would develop very slowly if cooled by ice (FM., Introduction).† In 1860, Youl arranged a third shipment of eggs to Tasmania, but the ice ran short and the eggs again died. Two years later he sent some 50 000 eggs out in the *Beautiful Star*, but these failed for the same reason. Finally, in January 1864, Youl arranged for the packing of the eyed ova between layers of moss in perforated wooden boxes surrounded by ice and he dispatched 100 000 salmon eggs and over 1000 brown trout eggs in the *Norfolk*, bound

* Two visitors' books in the Zoology Department, British Museum (Natural History) cover this period (1841–56, 1857–70). Both are indexed but Day's name does not appear; since he did not sign the books during his visits in 1865 and 1870, one cannot be certain that he did not go to the Museum in 1864.

† Burgess (1967 : 107) has pointed out that, amongst others, John Shaw, head keeper of the Duke of Buccleuch at Drumlanrig Castle, had earlier reported on the effects of temperature on the development of salmonid eggs in papers to the Royal Society of Edinburgh in 1836–43.

for Melbourne. They arrived safely 84 days later, were shipped to Hobart and although the salmon plantings did not succeed, the brown trout formed the original stock in Tasmanian and later in Australian rivers (Roughley, 1966).

While this final attempt was in progress, Day visited Youl in London (20 April 1864) and the latter demonstrated his ice technique (Day, 1868a). The following month Day drew up his plans for stocking the Nilgiri streams with trout and the lakes with Indian lowland fishes, sending details to the Madras Government (19 July 1864, No. 115, MGPD.Proc., in Q 658). The scheme was agreed (ibid., No. 116), an estimate of the cost asked for, and January or February of the coming year fixed for the date of the experiment. Day had put the scheme to the P & O Steamship Navigation Co., who assured him that his requirements for ice could be met (Q 658).

All seemed ready, but by 6 September Day was granted a further 6 months' sick leave. On 14 September he wrote to Denison pleading only partial recovery of his health and suggesting instead that the trout eggs be brought out by some competent officer due for return to India at that time (2 November 1864, No. 14, MGPD. Proc.). It is doubtful if anyone, and particularly anyone who knew Day, could have been deceived by this letter, yet for the record Day had nobly sacrificed his chance to supervise the trout experiment. Not only did Day insist that the steamship company was prepared to go to this trouble only in January or February, when the ships were less crowded, but the Governor of Madras at least was aware that trout eggs must be collected in winter. As Day anticipated, however, Denison protested that Day was the right man to do the experiment and the Government would be glad to hear from him when he was ready to undertake it (loc. cit., No. 15). In effect, he had extended his leave by a year.

Day seems to have been in so little doubt about the outcome of his letter that he had already initiated his second project, the book on Cochin fishes, and had taken a year's lease on Andover Lodge at Park Place in Cheltenham. After a week in lodgings in that town he moved into this 'nice little house' on 17 October 1864 (Q 654), some weeks at least before he could possibly have expected an official reply to his letter to Denison. In December he was promoted to Surgeon and he had before him the happy prospect of an entire year devoted to ichthyology.

On Christmas Eve he wrote to Denison about the trout experiment (21 February 1865, No. 123, MGPD.Proc.), perhaps anxious to keep the matter from being shelved, but increasingly his energies were turned towards his second project, the production of his book on Malabar fishes.

The Fishes of Malabar

The decision to expand his paper on Cochin fishes into a book may have been taken by Day before he came back to England. The text would be enlarged to give more data on the fisheries of the Malabar coast and full descriptions would be required for each species. Day's chief concern at this time was with the plates that would be made from his drawings. He approached the printers Williams & Norgate of Henrietta St, who contacted Burchard Brothers, a firm of photolithographers in Berlin. This was the beginning of a long series of negotiations over the production of the plates for the *Fishes of Malabar*. In July 1864 the printers had

evidently heard from Berlin and gave an estimate of the cost per plate (18 shillings) and the cost of printing and paper for 100 copies (7 shillings) (making a cost of £32 for an edition of 200 copies with 20 plates) ; they warned that better photographs could be produced if the drawings were 'a little distincter' (29 July 1864, Q 654). Early in August Day wrote to Brisbane Neill reporting progress (9 August 1864, Q 654). He estimated the cost at £35 : 6 : 0 for 250 copies containing 50 plates, thanked Neill for the photographs, enclosed a list of plates, and said that the writing was almost done and he could 'undertake to supply the whole by January'. In the proof copy of the *Fishes of Malabar* (Q 202) there is a single plate, not numbered and not included in the final copy, which shows *Serranus bontoo* which was photolithographed by Burchard Brothers of Berlin (another print of this is in the bound volume of reprints Eg. 14).

Perhaps for reasons of economy, however, since Day had to bear the full cost of the project, this method of reproduction was shortly to be abandoned in favour of copper engraving (etching), a technique that Day had studied through friends at the Ordnance Office (FM., Preface). Early in 1865, Day had decided on only 20 plates for the book (eventually 32 fishes on 20 plates), of which he had apparently inscribed 10 (Day to Surgeon-Major Smith, *c.* January 1865, Q 654). The Ordnance Survey Office in Southampton offered to have the plates 'bitten in' and to furnish an estimate of the cost of 'finishing' them (J. W. Peake to Day, 27 January 1865, Q 654). However, Day had meanwhile sent four plates to be bitten in to the lithographic firm of Wm Day & Sons of Lincoln's Inn, London, and from them he received an estimate for 'finishing' : 10 shillings per plate for biting in and £1 for additional shading on three plates (30 January 1865, Q 654). Even then, Day seems to have been undecided, for another firm was approached, Dison & Ross of St James' Place, London, and another estimate given (2 February 1865, Q 654). In April, Day was in touch with yet another printer, T. Brettel of Rupert St, London, who sent him estimates for editions of 250 and 500 copies (presumably this was for printing the text, which in the end was done by G. Norman of Maiden Lane, London) (2 February 1865, Q 654).

By now the project was in full swing and probably occupied most of Day's time. He had written to Bernard Quaritch Ltd asking the firm to act as agent (the book was eventually published under the Quaritch imprint) and their reply was enthusiastic : they recommended an edition of 500, all with coloured plates (28 February 1865, Q 654). Day was no doubt delighted, but Brisbane Neill, who eventually saw the book through the press (FM., Preface), cautioned Day and advised only half that number (10 April 1865, Q 654). The number actually printed is not recorded, nor the proportion of coloured copies (47 copies remained unsold in 1897 – Quaritch, *in litt.*).

In May 1865 Day wrote to Gantz Brothers of Mount Road in Madras and they replied that they would be pleased to sell the book in Madras and have their name on the title page, but Day seems to have changed his mind or perhaps merely retained the firm as agents (Q 654).

At about this time also, Day drafted a letter in which he hoped that 'H.E. the S of S [Secretary of State, i.e. Sir Charles Wood] for India will be pleased to sanction

such pecuniary aid to my proposed work on the Fishes of Malabar as will enable me to publish it previous to my return to India in 1866' (Q 654). There is no reply but almost certainly he received a polite rebuff.

The Ordnance Office in Southampton seems to have been unable to complete the plates and probably recommended the local firm of D. Law to Day. By July Law had given Day three sample plates, with an estimate of £1 : 5 : 0 to £3 : 0 : 0 per plate, together with some hints on etching (30 June 1865, Q 654). It was this firm that completed the remainder of the plates (bill for £30 : 4 : 0, together with complete list of the 20 plates sent 9 August 1865, Q 654).

The time was now ripe for soliciting subscribers. Day evidently sent out some kind of prospectus (probably printed) but no copy exists amongst the papers examined. On a spare page of his proof copy of the *Fishes of Malabar* (Q 602), however, Day wrote forty-six names in a 'List of subscription papers personally circulated, with the result'. The result was disappointing : only twenty-six requests for coloured copies and fifteen for plain. Day must have persisted, although some of the early subscribers let him down, since the printed list at the end of the book contains only twenty-five subscribers but fifty copies taken (thirty-one coloured and nineteen plain). Like many young authors, Day had hoped for a better response, especially from official bodies in India. In July he had written to the Secretary of State, Sir Charles Wood, submitting specimen sheets of the book, but the latter would 'not pledge patronage of a book not yet completed' (Q 654). Eventually, the Secretary of State agreed to subscribe, but to only two copies (coloured). Day was furious and composed an irate reply (undated draft, Q 654) pointing out that he had expected forty copies to be taken, as had been done for Gray's publication of the Hardwicke drawings (Gray, 1830–35) ; that his expenses were such that he would not have gone to press without proper patronage ; and that the public in India would be aware from the list of subscribers to be published in the book that scientific publications did not meet with official support (Q 654). However, there were compensations. The Rajah of Cochin put his name down for six copies, the Maharajah of Travancore for five, the Madras Government took five, the Bombay Government four, the Medical Department at Bombay seven, and so on. Coloured copies were to be sold at 4 guineas and plain copies at 2 guineas.

The next step in promoting the book was to dedicate it to someone of importance. Day chose Edward, Prince of Wales. The scheme might have succeeded had it not been for the intervention of Albert Günther. As it was, Day merely received a polite reply from Marlborough House stating that His Royal Highness 'finds it expedient to act upon the rule of declining to accept dedications from authors with whom he is not acquainted, either personally or through former writings' (Herbert Fisher, Private Secretary, to Day, 26 July 1865, Q 654). For Day this was clearly a great disappointment. What he did not know, and perhaps never knew, was that this apparently plausible refusal was based on no expedient rule devised by the young Prince, but was entirely the result of Günther's opinion – for Günther had, in the eyes of Marlborough House, *utterly damned the book*.

In July Day evidently sent a kind of brochure or specimen sheet to Marlborough House and in turn this was passed by Herbert Fisher to Günther with a note asking :

'Will you tell me in confidence whether the book referred to in this note is likely to be of sufficient importance to justify a dedication to the Prince of Wales.' (July 1865, BMNH.MS.G. **15**.) Although Günther's actual reply may have been less strongly worded, his feelings about Day's book are clear from an undated draft reply, which deserves to be quoted in full.

> I happen to know the work referred to in your note, it having been shown to me by the author some time ago. I regret to see that against my advice, endeavours are made to publish it. The author is a beginner in this branch of zoology and the discoveries made by him are, as regards intrinsic value or number, not important enough to warrant the publication of a separate work. The illustrations are from a scientific point of view of a very inferior description, and frequently inaccurate.
>
> I am sorry to be obliged to give so unfavourable an account of the book, but I should be very sorry to see it coming out in the form alluded to in your note, as it is sure to provoke rather sharp [deleted and 'just' substituted] criticisms and certainly will not meet with the approval of Zoologists.
>
> (undated, BMNH.MS.G. **15**)

Fisher replied, thanking Günther for information about 'Mr. Day's proposed work' (26 July 1865, BMNH.MS.G. **15**) and the matter was closed.

Günther's action is curious, not least in view of his subsequent review of the *Fishes of Malabar*, of which he wrote : 'This book will be of great service to the local naturalist. . . . The plates are executed by the author, who has bestowed much labour on them, and are certainly very accurate' ; he also strongly recommended the purchase of the coloured copies (*Zoological Record*, 1865 : 166–167). Günther's criticisms of the book were solely on the grounds that Day had drawn no zoogeographical conclusions and that some explanation was needed for the fact that Day described 230 species (64 species of other authors omitted), whereas Cantor, in three and a half years at Penang, collected some 380 species. Day's *Fishes of Cochin* was also mentioned, but with a mere indication that the same information was in the *Fishes of Malabar*. Günther, as Day and others were later to discover, could be a most scathing critic, but in this review there is no hint of the tone adopted for Marlborough House. The reason may lie partly in the relationship between Günther and Day during this period.

Günther's letter to Fisher says that the work had been 'shown to me by the author some time ago . . .' and it suggests that he had personally advised Day not to publish it. This may have been done on one or both of the occasions that Day presented his two parts of the *Fishes of Cochin* to the Zoological Society (10 January and 14 March 1865).

Following the first Zoological Society meeting, Day wrote to Brisbane Neill complaining that Günther had, unknown to Day, just described one of the specimens Day had presented to the British Museum, giving it the name *Catopra malabarica* in the November issue of the *Annals and Magazine of Natural History* (1864 : 375) ; Day said that he believed the fish to be *Badis chloris*, but would have used the name *malabarica* had he known Günther's intentions ; he continued : 'Will you kindly

ask him to be so good as not to name any of the other new fish which I have presented as I intend all to appear in my forthcoming papers & subsequently in my book.' (Q 654, undated draft.) In another draft (written out neatly by his wife, Q 654) Day said : 'My idea is to take no notice of his paper which I have not seen until today.' It is interesting to note that Day did not write directly to Günther. However, he wrote to Philip Sclater, then editor of the *Proceedings* of the Zoological Society, on the same subject and said that he did not wish 'to dispute his [Günther's] statements respecting the fish . . . [and] . . . do not wish to fall foul of his opinion . . .' but he could not alter the name he had used, i.e. *Badis chloris* (undated draft, Q 654). Perhaps this was answered by Sclater's letter, dated 16 January 1865, saying that proofs of his Cochin paper would be sent in due course and 'No one will make any alterations except yourself and *I* (as general Editor).' (Q 654.)

The extent of Day's indignation can be judged from the soothing tones that Neill felt obliged to adopt. Replying to Day, Neill advised that 'if you are to comment on Günther's nomenclature or remarks it would be *both* civil & prudent to let Günther see the paper privately before it be read or published. The Scotch proverb says wisely "Let sleeping dogs lie" i.e. lie still [the necessity for this little afterthought speaks volumes]. If Günther must be corrected, why what must be must be ; but there will be an advantage to both yourself and him in coming to an understanding as to what is to go to the public & in what form.' (19 January 1865, Q 654.) In an undated draft from Day to Neill, to which the above may have been a reply, Day threatened that in his next paper 'I must draw attention to numerous mistakes and omissions in Günther's Catalogue. . . . Do not mention these things to Günther, who by the way will not see my paper again until it is printed. It is already begun.' (? 18 January 1865, draft, Q 654.)

Neill's letter may have had some effect, however, for Day next wrote an extremely polite letter to 'My Dear Dr Günther' reminding him of his promise to 'run your eye over my ichthyological papers' and asking for advice before sending his work to the Zoological Society (22 January 1865, BMNH.MS.Z. – see p. 24). Neill wrote to Day, having apparently heard that Day had written to Günther (23 January 1865, Q 654), but the affair must have dragged on since Neill later wrote : 'Perhaps your best plan is to let Günther alone at present and when you have got at a rare specimen not in the B M Coll. send it as a peace offering' (11 February 1865, Q 654). Three days later, Neill wrote again with the advice to follow '. . . Mr. Benson in regard to Günther's new fish. I suspect you are right, but the many will be swayed by authority, indeed must be unless they have the fish before them.' (14 February 1865, Q 654.)

Eventually, Day gave in. He deleted *Badis chloris* from his proof and reluctantly substituted Günther's name *Catopra malabarica*, insisting, however, that in his opinion the fish was not a *Catopra* but probably a *Badis*. He then asked the opinion of Sir John Richardson, who tactfully suggested that he send a specimen to Pieter Bleeker. It is not clear whether this was Day's first contact with Bleeker, but the latter evidently pronounced the fish to be undoubtedly a '*Nandus* as at present constituted, but which will probably at a future date have to be placed in a distinct, but nearly allied genus' (FM. : 130). In his reply to Bleeker, Day said that he had

're-examined the *Catopra Malabarica* (Günther) and also made a skeleton of one specimen, and now see clearly what you have been so good as to point out – that it is a *Nandus*. I would here observe upon its having pseudobranchiae which are absent in the *Nandus marmoratus*.' (13 August 1865, RMNH.MS.) In the *Fishes of Malabar* the species is placed in *Nandus*, with *Paranandus* suggested as a possible new generic name. It is quite clear from Day's footnote that 'the expressed opinion of that excellent ichthyologist', i.e. Günther, in deference to which Day had originally adopted the name *Catopra*, was an opinion that must now contend with that of Bleeker as well as of Day, if not of Sir John Richardson (FM. : 130). Günther reacted immediately and in the *Zoological Record* (1866 : 141–142) poured scorn on both Day and Bleeker; Day 'is confirmed in this view by the skeleton, as if he ever had seen a skeleton of *Catopra*,' while 'It is to the Recorder quite inexplicable how even Bleeker could add to the confusion by referring it to *Nandus*. The essential character of *Catopra* is the singular dentition of the bottom and roof of the cavity of the mouth ; to separate *C. malabarica* as a distinct genus on account of the entire praeoperculum is a proceeding quite consistent with Dr Bleeker's systematic attempts generally, but which will not be adopted by the majority of ichthyologists'. In the *Fishes of India* Day placed the species in Jerdon's *Pristolepis*, in the subgenus *Paranandus*, with *Catopra* as a second subgenus for Bleeker's *C. fasciata*.

When it came to acknowledging the help he had received in producing the *Fishes of Malabar*, Day mentioned only one ichthyologist, Bleeker, who had examined specimens for him 'and been so good as to give me his opinion upon them' (FM. : vi). The next paragraph gives a list of species presented to the British Museum, thus emphasizing the omission of Günther's name.

Günther's letter to Marlborough House may reflect, even if unconsciously (for Günther was no doubt a fair man), some personal irritation with the manner in which Day was producing the book. Günther implied that he had seen at least a number of the plates. It seems unlikely, however, that Day could have been persuaded to take the material for the book to Günther for criticism after the exchange of letters cited above. Day seems to have passed his Cochin paper to Günther for criticism on or before 22 January (implied in his letter of that date cited above). Since the text of the book was chiefly an expansion of the Cochin paper, Günther may have felt justified in criticizing the former on the basis of the latter. Possibly, Günther saw some of the drawings at the 10 January meeting of the Zoological Society. In March, however, Day wrote to Quaritch (draft of March, no date, Q 654) promising to bring 'specimen copies of several perhaps half of the plates finished and coloured . . .' and it is possible that Day combined this visit with the reading (14 March) of the second part of his paper on Cochin fishes. At this meeting, and perhaps elated by the enthusiasm shown by Quaritch (500 coloured copies), Day showed off his drawings. In a report of this meeting in the *Medical Times & Gazette* (cutting, also Day's draft, Q 654) Day was said to have '. . . read a most interesting paper on the hard-rayed fishes of Cochin on the Malabar coast. . . . He brought about forty most beautiful coloured drawings and engravings which he had done to illustrate his collection'. At this meeting he must surely have announced his intentions regarding the book. The only

explanation that can be offered regarding Günther's *volte-face* on the drawings in his review is that what Günther saw were the earlier plates done by Wm Day & Sons, which Day perhaps redrew subsequently for Law of Southampton, possibly after criticism by Günther at the second Zoological Society meeting.

Whatever the sequence of events, the book should have been essentially ready for the printer by August when Law sent his bill for the 20 plates. There is no reference to the book in September, but at the end of October Day wrote to the Secretary of State for India and spoke of the 'work now in press' (31 October 1865, Q 654). In an undated and almost illegible draft to the Chief [? Secretary], written in August, Day wrote : 'I have the honour to enclose the prospectus of a work I have in the press and which will be published in October. . . . It is entirely completed but not printed.' (Q 654.) The draft was probably of Day's letter to the Chief Secretary to the Madras Government, written 17 August and soliciting subscriptions (27 September 1865, No. 147, MGPD.Proc., in Q 654). The Introduction in the proof copy (Q 602) is dated 'Cheltenham, *October* 27th, 1865' and it was perhaps in about mid-October that Day received galley proofs since he appears to have sent at least those Introduction pages relevant to early trout planting experiments to James Youl (whose name and work are mentioned, FM. : xiii) and to have received them back 'without any alteration' (Youl to Day, 28 October 1865, Q 653). One would have expected the book to have appeared at least by late November. In the event, there was a considerable delay, possibly in finishing the colour work, and there is even Day's statement (TIF. : 63) that the book was '. . . published by myself, in 1866. . .'.

In October the year's lease on the Cheltenham house expired and Day moved to the Isle of Wight for long enough to justify a printed label 'Dr F. Day, Care of Rev. F. Stockdale, Haven Street, Ryde, Isle of Wight' (Q 651). In the published version of the book the date of the Introduction has been put back from 27 October to 27 August (although no correction appears in the marked proof), presumably because by October Day was no longer in Cheltenham. The title page, even at this late stage, was left dated MDCCCLXV. The page proof was apparently corrected in Ryde in December since it is inscribed 'Francis Day, Cumberland House, St Thomas Street, Ryde, Dec. 15th 1865'. In fact, two copies of the work, one coloured and one plain, were available by mid-December. Day sent them, with a letter dated 18 December, to the Secretary of State for India, speaking of '. . . a work just published by me on the "Fishes of Malabar" ' (Q 654). For his pains, he received a cold rebuff ; the Secretary of State would take two coloured copies, but these would be 'obtained in the usual manner through the Bookseller to this Office. . . . The two copies of the work forwarded by you, are herewith returned.' (6 January 1866, Q 654.)

The main bulk of the copies for subscribers may not have been available until early in 1866. Day apparently asked Brisbane Neill to dispatch these since he himself was fully engaged in packing up their temporary home in Ryde and seeing to the care of the trout eggs. In a letter from Neill to Day, written much later that year, Neill said that he had done as Day instructed and 'I believe I wrote to you on the subject before you left Southampton. . . . I wrote a short note with

each copy stating that it was forwarded by your desire . . .' (8 June 1866, Q 654). Day left England on 4 February. Two days earlier Neill wrote to Bleeker to say

> My friend and former brother officer Mr Day of the Medical Department of the Madras Army, having been obliged to proceed to India before the publication of his work on the Fishes of Malabar, has requested me to see that a copy with coloured plates should be sent, with his compliments, for your acceptance. Mess[rs] Williams and Norgate, foreign booksellers here, have undertaken to transmit it to you and will forward it by the first opportunity. . . .
>
> (2 February 1866, RMNH.MS.)

It is not clear whether the copy was then ready for dispatch or whether plain copies were available but not the coloured ones. Had copies been available in December, Day would surely have had time to address the covering notes himself, at least for the plain copies.

Two copies of the *Fishes of Malabar* were received by the India Office on 5 February 1866 and on the 21st of that month one of these was withdrawn and passed over to the India Museum (IOR., *Day Books* – see p. 118 below). It is perhaps significant that these two copies were sent at the time that Neill was dealing with the coloured copy for Bleeker, suggesting that copies were not available until as late as early February. On the other hand, the books may have arrived from the printer in batches, of which these were not the first.

For purposes of dating, however, it is preferable to retain the accepted date of 1865. A plain and a coloured copy were sent out on about 18 December and although this is only three days after the date in the proof copy, there is no evidence that the latter date truly signifies receipt or return of the proof ; the copies sent to the Secretary of State were certainly definitive and the date on the proof might even refer to the date that these copies were available. Two coloured copies were kept by Day and remained within the family rather than being part of the donation to Cheltenham library (Eg. 21). One of these may have been the coloured copy sent to the Secretary of State, but more likely these were copies for his children since the ornamental bindings are identical and one was certainly bound in 1876 (receipt inside). Neither copy is marked or annotated.

Although the *Fishes of Malabar* is overshadowed by the *Fishes of India*, it was nonetheless an ambitious work for a man with no ichthyological training. It shows the extent to which Day was able to learn from what literature he could acquire in Cochin, for the fish fauna is rich and somewhat bewildering to the newcomer. Had Day not clashed with Günther he might have spent more time at the British Museum comparing his material with known species, but even without this it is clear that he was striving towards a degree of professionalism that would soon overtake his medical work.

The trout experiment 1866

Day had been back in England for almost two years and the period marked a turning point in his career. For some thirteen years he had carried out his medical duties with competence and no doubt enthusiasm, using his spare moments for

what his superiors obviously regarded as an interesting hobby. Official recognition of his book might fall short of Day's own expectations, but he was probably seen as one of those talented officers, like Major-General Hardwicke, Brian Hodgson and others before him, who could make a worthwhile contribution outside the field of his duties, but without impairing the latter.* For Day, however, this was not enough : he wanted to be a professional naturalist.

In the latter part of 1864, if not earlier, Day began searching for some kind of civil employment. In December he received confidential news from 'Smith' (Surgeon-Major George Smith of the Madras Medical College) that a committee had been appointed to review the possibility of affiliating the Medical College with Madras University, in which case a Professor of Comparative Anatomy would be required ; Smith promised to keep Day informed of developments (12 December 1864, Q 654). Day did not get the post, if indeed it materialized at this time, but he decided on an even more attractive scheme.

Some twenty years before, the post of Naturalist to the Madras Presidency had been created and for a short time it was filled by Dr Christie Turnbull. It had since lain vacant and Day, with his usual energy, drew up a printed memorandum headed 'Observations on the importance of the appointment ot Naturalist to the Madras Government'. In October 1865 he sent copies of this memorandum to Sir Walter Elliot, as well as to Brisbane Neill (and probably to a number of others) (Elliot to Neill, 6 November 1865, Q 654) and on 31 October he made a formal application to the Secretary of State, enclosing a memorandum and, for good measure, 'Specimens of my own drawings & engravings for a work now in press' (Q 654). A fortnight later, Day's hopes were dashed ; the India Office thanked him for his letter and enclosures but regretted that the post of Naturalist could not be offered to him (16 November 1865, Q 654). To Day's disappointment was added the refusal of the Secretary of State, only a week earlier, to subscribe to more than two copies of the *Fishes of Malabar*, not the forty copies that Day had felt to be the recognized number (undated draft, reply to letter No. 1807, of 9 November 1865, Q 654).

Meanwhile, Day was busy with the move from Cheltenham to Ryde, with the publicity for the book and, after a year's delay, with arrangements to begin the planting of trout in the rivers of the Nilgiri Hills near Ootacamund. In November he acknowledged receipt of £60 for the trout experiment from the Madras Government and planned on 'leaving Southampton, with the Ova, on February 4th, 1866, in the P. and O. Steamer' (17 November 1865, Q 654). Negotiations were restarted over the supply of ice, especially for the difficult overland transfer by rail from the ship at Alexandria to a second ship at Suez (the Canal was not opened for another three years) and six stout boxes were procured. Three large slate troughs were then sent out to Madras for the reception of the eggs at Ootacamund.

Before the end of the year Day was in touch with his friend from student days, Frank Buckland (1826–1880). Like Day – but after a year as House Surgeon at

* A rather brief list of such contributions from members of the Indian Medical Service is given by Magnanand (1955), based on the scattered information in Crawford (1930). Although full of omissions (including Day's works) and not covering work published in journals, it is still an impressive list.

the Hospital – Buckland had begun a military career (Assistant Surgeon, 2nd Life Guards), but disappointment over promotion, coupled with growing success in his literary and scientific activities, led him to resign his commission in 1863 (Bompas, 1905). One of Buckland's activities during the next two years was the collecting and hatching of trout eggs* and Day could not have been more fortunate in his choice of a companion. The Hampshire streams around Southampton appeared ideal, being close enough to the port for the eggs to be brought to the ship with little difficulty. In early December a friend of Day's at the Ordnance Survey Office invited Day to view the 'Club waters' (Dennis James to Day, 9 December 1865, Q 654).

The result of this visit is not recorded, but Day apparently had some trouble in persuading proprietors of trout streams to allow him to collect eggs, some having already promised other collectors and some believing that the stripping of eggs was harmful to the females (MS. notes in Q 61). Eventually he was given permission by Melville Portal, owner of the papermill at Laverstoke Park near Micheldever in Hampshire (the Portals had for generations supplied the paper for Bank of England notes). Melville Portal was married to Lady Charlotte Mary, daughter of the 2nd Earl Minto, whose father had been Governor-General of India (1807–14) ; Day may have known a member of the family in India.

Day and Buckland arrived at Laverstoke on 18 January and at 9 am began the cold and tedious business of netting this stretch of the river Test (Q 654). At first they caught only males or spent females, but after some four hours of wading they had several thousand eggs. 'It was raining incessantly all day [and] at 2.30 I became so cold from wading that I had to stop and go to the Red Lion' Day later wrote (Q 654). Buckland, on the other hand, was probably in his element. Of another occasion he boasted : 'I candidly confess I amazingly enjoy a day's trout egg collecting . . . again it is cold work, and I am as fond of cold as a polar bear.' (Buckland, 1873.)†

Buckland took a few hundred eggs with him to hatch out by way of experiment at Windsor Park. It was getting late and Day stayed the night, leaving the tin can with the eggs in the river and taking the first train to Southampton in the morning, the can slung on a stick laid across the seats of the railway carriage (Q 61). At the port, Day carefully packed the eggs into six boxes of 1-inch pine supplied by James Youl, the bottom of each filled with charcoal, the sides and bottom perforated, and the eggs layered with moss. These were then placed in the refrigeration room until 2 February when they were stowed on board the S.S. *Mongolia*. The ship sailed two days later and on arriving at Alexandria (16 February) the boxes were transferred to the train for the crucial overland journey across the desert

* Burgess (1967) has given an excellent account of Buckland's involvement with the Acclimatization Society, with fish hatching and its demonstration at the South Kensington Museum in 1863, and with James Youl's first partial success in sending salmon and trout eggs to Tasmania in 1864. Buckland was also instrumental in founding *Land and Water* (a competitor to *The Field*) in 1865 and it was in this weekly journal that Day later published his *Tour through the fisheries of India* and numerous small articles.

† To commemorate the occasion, Buckland sent to Day a few days later a copy of his book *Fish hatching* (Buckland, 1863). In the Cheltenham copy (Q 61) is the message 'To his friend F Day from his friend The Author Jan 22 1866 In memory of Trout eggs Jan 18th 1866'.

to the S.S. *Bengal* at Suez. All went well, however, and the ship docked in Madras on 12 March. The Public Department of the Madras Government arranged for the boxes to travel by rail to Coimbatore, a distance of about four hundred and fifty kilometres, and Patrick Grant (1820–1904), the Collector there, had them taken by palanquin, with relays of bearers, the remaining eighty kilometres to Ootacamund where they arrived on 15 March. A brick 'fish house' had been constructed in the Government Gardens to contain the slate troughs and two further troughs of teak, the whole system being gently irrigated by water from a nearby stream.

Two months had now elapsed since Buckland and Day had collected the eggs and one can imagine Day's anxiety, although he had seen ova of 93 and 143 days 'treated by ice' when he had visited James Youl, two years before (19 July 1864, No. 115, MGPD.Proc.). In the event, the eggs arrived in good condition and for a fortnight or so the experiment promised well. On 31 March, however, there were violent thunderstorms and the water flowing through the Fish Hatching House brought not only detritus but small leeches which fed on the eggs. Two days later Day reported that 'since Saturday afternoon [1 April] a very great mortality has set in amongst the trout eggs, as many as 300 having died since that time' (newspaper cuttings, probably *Neilgherry Excelsior*, also *Madras Times* for 12 April 1866, Q 654). By Tuesday the mortality was still continuing and he had found that 'a small Annelid of the Suctorial order is destroying the eggs' (loc. cit.). The next day Denison visited the hatchery and saw the sad state of the trout experiment (loc. cit.). Day did what he could but eggs continued to die and by the following Monday all was over. Day published a detailed account of the trout experiment (Day, 1868a) and made an official report to Grant dated 14 May 1866 (4 June 1866, No. 3815, MGRD.Proc., in Q 658 ; see also draft letter to Grant, 2 April 1866, Q 654).

To have brought the experiment so far, after successfully overcoming all the difficulties of transporting eggs from a Hampshire stream to the Nilgiri Hills, and then to have failed as a result of a chance thunderstorm, was a bitter blow for Day. He wrote of his disappointment to James Youl and to Frank Buckland (22 July – Eg. 1 : 23) and received sympathetic replies (Youl to Day, 6 June 1866, Day to Buckland, 23 September 1866, Q 654). One can imagine, therefore, the effect on Day of Günther's crude remark in the *Zoological Record* the following year : the failure had been 'foreseen by all acquainted with the nature of Salmonoid fishes' (Günther, 1868b : 151). The failure had surely not been foreseen by Frank Buckland or James Youl or Colonel Denison ; or if it had, then they were as wrong as Günther, for two years later Mr W. G. McIvor, the Kew gardener appointed Superintendent of the Government Gardens at Ootacamund in 1848, succeeded in bringing out (as fry rather than as eggs) trout from Loch Leven, as well as tench and carp (Day, 1876b : 562). In 1873 Day caught tench in the Nilgiri streams and, although the trout did not do quite so well, Day received a specimen of 16·5 cm three years later, thus proving that trout would breed there (Day, 1876b : 564). As he later noted (Day, 1887 : 184, footnote), this paper disproving Günther's forecast was merely mentioned by the *Zoological Record* without comment. The

following year Day had driven the point home even further. In the third part of the *Fishes of India* (August 1877 : 508) he illustrated the Nilgiri specimen and referred to Günther as 'wise after the event and may-be not anticipating that it would be renewed . . .'. Again this elicited no comment. In 1880 Günther even persisted, saying in his *Introduction to the study of fishes* (p. 641), '. . . whilst the attempt of transferring them into the low hill streams of India ended (as could be foreseen) in a total failure'. As Day pointed out, at 7000 feet [2100 m] or more, the Nilgiri waters were scarcely 'low hill streams' and as the fishes had evidently bred, the attempt was hardly a failure. (Day, 1887 : 184.)*

Day now turned in earnest to the second part of his project in the hills, the stocking of lowland fishes in the Nilgiris. The idea had been suggested by John McClelland (1805–75) some fifteen years earlier (FM. : xi) as a means of supplying fresh fish to hill sanitaria, military cantonments and towns where Europeans resided. On 16 April Day asked for formal permission to start the experiment (Day, 1868a), although he had originally applied when Sir William Denison had still been Governor of Madras (19 July 1864, No. 116, MGPD.Proc.). A month later (23 May 1866) permission was granted (Day, 1868a), but Day had probably spent the time surveying the area. On the upper plateau of the Nilgiris he found only one indigenous fish, *Paradanio neilgherriensis* (Day, 1867a : 282), yet the lake at Ootacamund and the Pykara and Avalanche rivers appeared to be suitable, if not for trout, then for some of the local fishes from further down the rivers (27 June 1866, No. 4379, Proc. Board of Revenue ; also, MGRD.Proc., No. 525). In his first experiments he brought up fish in tin cans from Billicul and Seegoor and from the lower reaches of the Pykara, but he later settled on Mettapolliam on the Bowany river (about 300 m above sea level) as a better source for fish. Mettapolliam was some 40 km from Ootacamund and it meant setting out with the Indian bearers at 6.30 pm, travelling through the cool of the night, and arriving at Ootacamund at 7.0 am. To avoid this long journey – as much for the fish as for himself – he set up a stock pond at Coonor, within 16 km of Ootacamund, into which the fish could be put, leaving him merely a twice-weekly visit to collect them. In the end, he favoured earthenware pots for transporting the fish. He noted the tendency for the bearers to half empty the pots on the way up, refilling them when they got near to their destination, but he overcame this by a system of rewards for each live fish that arrived. By the end of the experiment he had brought up 16 eels, 28 large carp (*Barbus carnaticus*), 159 snakeheads (*Ophiocephalus*, chiefly *O. guacha*), 116 miscellaneous cyprinids (*Labeo*, *Rasbora*, *Paradanio*) and a few other large *Barbus* species (Day, 1868a : 53).

Permission for this experiment had originally been granted by Denison (19 July 1864, No. 116, MGPD.Proc.), who was clearly much in sympathy with Day's aspirations to ichthyology, and for a while all went well. Day was appointed to the post of Medical Store Keeper at Madras (26 May), with a salary of Rs 1000 per month, although by staying in the hills he forfeited an extra Rs 110 that went

* In the billiard room of the Ootacamund Club is a suitable token of Day's faith in the trout project: a 2·5 kg specimen from the Pykara river, caught in 1911.

with the post and in addition bore the cost of the stocking experiments (undated draft to Patrick Grant, Collector at Coimbatore, Q 654). Nevertheless, this was the kind of work that interested him. His wife Emma was with him at Ootacamund, he had taken a small house until the beginning of October (when he was due to return to Madras), and in spite of the cold and wet weather he was clearly enjoying himself in the Nilgiris (see below, p. 90).

Unfortunately, this pleasant state of affairs was to be brought to an abrupt end. Denison retired in March 1866 and was replaced as Governor by Francis, 9th Baron Napier of Murchistoun. Lord Napier was a very different man and not nearly so sympathetic to Day's fish experiments. In addition, and perhaps initially guiding Napier's attitude to Day, there were some who criticized Day's 'holiday' in the hills. In the *South Indian Observer* a lampoon appeared under the heading 'Dark Night, Esq., F.L.S., F.Z.S.' (undated cutting, Q 654). This satirized Day's report on the Nilgiri experiments, which had been extensively quoted in the *Neilgherry Excelsior* (cutting, about June 1866, Q 654), and it concluded with the comment 'we have no doubt Government, who seem quite struck with the production, will see the propriety of allowing D^r^ Night to reside on the hills on full pay, and continue piscatorial researches which redound not only to his own but to his country's honour'. Above the cutting is written 'skit written by D^r^ Furnell to S. India Observer on Frank's Report (subsequently apologized . . .). Too absurd to be annoying'. Of Furnell, C. A. Lawson of the *Madras Times* had written to Day, 'I heard from Furnell lately but I know little about him and don't wish to know more. He has very strange ways which do not please friends. However, we are all of us peculiar to a greater or lesser degree and must make allowances for a man settled in a place like Cochin.' (26 January 1865, Q 654.)*

In July the blow fell. James Shaw (1809–89), Principal Inspector-General of Hospitals, wrote that Day 'must think very soon about coming down to this hot part of the world . . . I will send you up an official instruction but you had better be prepared for the move – I write this with Lord Napier's knowledge.' (9 ? July 1866, Q 654.) Day wrote hastily to a fellow surgeon, George Bidie (1830–1913), and received the reassuring reply that 'At first D^r^ Shaw thought it necessary that you should come down, but last night he sent for me and asked, if I would take charge of the Lunatic Asylum until you came, in case you were allowed to remain at Ooty [Ootacamund] for some time longer. I said of course that I had no objections as the charge involves little or no work, and so it is all arranged that you can stay until the [Medical] College [opens ?] the first Monday in October. . . . I am glad to communicate to you the good news.' (24 July 1866, Q 654.)

Although Shaw seems to have been on Day's side, the respite was only temporary. Lord Napier, or someone in the Madras Government, was determined to remove Day from the hills before October. The posting that they chose for Day could not have been more unpleasant. Kurnool, on the Kistna river, was perhaps the most unpopular of any within Madras Presidency, being generally considered a

* Michael Cudmore Furnell (1829–88), acting Garrison Assistant Surgeon at Fort St George in 1866 and Professor of Anatomy and Physiology at the Medical College in Madras; previously Civil Surgeon at Cochin (Crawford, 1930; MAL., 1866).

'penal station'.* As Day later wrote to Buckland, one officer in three either died there or left sick every year and of the past twenty years only two (actually five) had been free of cholera; in June there had been a serious cholera outbreak in 'this abominable place' and one in four died, or one in three per month of those present for duty (23 September 1866, Q 654). The *Madras Times* noted Day's posting and asked 'Is this intended as a reward to the doctor for his eminent services in pisciculture?' (undated cutting, Q 654). The *Neilgherry Excelsior* was even more outspoken:

> The fish experiment . . . an order was issued for the discontinuance of the *fish experiment*. Dr Day was directed immediately on the arrival of Lord Napier, not to go to Madras to resume his appointment there, but to proceed to Kurnool. It was hoped that the endeavours of Dr Day to introduce low country fish would be supported – instead of this Lord Napier sends him down at once to a penal settlement.
>
> (1 September 1866, cutting, Q 654)

Day then suggested that he relieve an officer in Madras who could be sent to Kurnool, but Clarence Cooper (1830–1924, Surgeon at Madras – Crawford, 1930) wrote that this was no solution since the Madras officers were already doing double-duty; he himself was out of health, Mrs Croudace (wife of Asst Surgeon Thomas Croudace at Kurnool) had become deranged, and Day must come to help (Cooper to Day, 25 August 1866, Q 654). Day was not convinced of this urgency and later complained that he had been sent 'not to meet a sudden emergency outbreak of illness, but to relieve an official surgeon who wishes to proceed to [. . . ?] on furlough' (Day to Grant, undated draft, Q 654).

Day was justifiably angry since his fish stocking programme was proceeding well and he had a network of Indian collectors who brought him live fishes from the lower reaches of rivers to place in the Ootacamund lake and the Pykara river (many letters and receipts, Q 654). By now he had stocked about three hundred fishes (of ten species – Day, 1868a) and the local European community was probably sympathetic over his sudden transfer, although one can see Day's hand behind the following newspaper report (which appeared just after Day left).

> If the stocking of the Hill waters is continued as it has been this month [August], we trust that it will be in our power at a future date to congratulate the residents on this experiment, the success of which appears to be now almost a certainty, and we sincerely hope that nothing will be allowed to interfere with its final accomplishment.
>
> (Probably *Neilgherry Excelsior*, repeated in part in perhaps *Madras Times* dated 28 August 1866, cuttings, Q 654)

On 22 August Day was given notice that he was appointed, as from the next day, to be in medical charge of the 28th Regiment of Native Infantry at Kurnool

* This was not the first time that Day had tried to avoid a Kurnool posting. Some years earlier he had arrived in Madras to find that his detachment was leaving for Kurnool the next morning. Although urged to announce his arrival officially, he waited two days; his substitute, Dr Cheyne, 'died of cholera on the road' (Eg. 1 : 93).

and that he was to proceed there immediately. The *Neilgherry Excelsior* (loc. cit.) commented on the 'peremptory and unnecessarily harsh nature of his removal', for Day was 'deprived of his privilege of going to Madras *en route*, to get his low country clothing, his instruments, &c.' Day was furious and wrote to Shaw insisting that he must take up his post as Store Keeper in Madras, having strong reasons 'w^{ch} I c^{d} explain in an interview but cannot write' ; he pointed out that he had no clothing, books or instruments ; and that his wife had been ill since Saturday and 'if you will let me go to Madras you will see her & judge for yourself what the possibilities are of getting her to Kurnool' (copy, 23 August 1866, Q 654). Shaw replied, presumably fairly sternly, but the letter did not reach Day in time and Day seems to have telegraphed his intention to come to Madras. Shaw must have then telegraphed a refusal, for Day later apologized and reported his departure for Kurnool as being so sudden 'that we had neither pillows, mattresses, and scarcely clothes with us' (copy, Day to Shaw, 5 September 1866, Q 654).

In his letter to Buckland cited above, Day gave vent to his bitterness at having to abandon the fish stocking experiment.

> With the most flattering assurance that my piscultural labours are the most trivial Med. duties in the Presidency, I am dispatched here [Kurnool] at 24 hours notice, kept out of my Madras Staff Appt. for some indefinite time at a pecuniary sacrifice of £11 a month. You talk of pisciculture paying, I have not found it so, but I must confess to be unskilled in politics & my limited ideas are unable to fathom the depths of the deep seated liberal views, with which we in India have lately been favoured from Europe.
>
> (23 September 1866, Q 654)

To add to the tempers aroused by Day's transfer to Kurnool, it appears that he openly laid the blame on Shaw's Secretary, William Cornish (1828–97 ; MRCS, St George's Hospital in 1852, thus a contemporary there of Day's – Crawford, 1930). Cornish received the message at second hand as 'Tell Cornish he has got me sent away to Kurnool at last' (cited in Day to Cornish, 3 September 1866, Q 654). Cornish wrote to Day from Ootacamund in astonishment that 'you attributed your removal to Kurnool to my influence' (27 August 1866, Q 654) and he sent a copy of his letter to Shaw. Day also managed an interview with Lord Napier, which left him with the impression of being '. . . sent away in disgrace for something I had done . . . but what I had done I did not know . . .' (Day to Shaw, 5 September 1866, Q 654). Later, when naming a new species of *Nemacheilus*, Day gave it Denison's name and said '. . . under whose auspices the Indian fish-experiment was commenced ; and during whose governorship, had he continued in Madras, it would most assuredly have been successful' (Day, 1867a : 287). He was probably unfair on Napier who, on receipt of Day's official account of the experiment, directed 'that the thanks of Government be conveyed to Surgeon Day for his useful and interesting report on the streams of the Neilgherry Hills, and on the experiments which have been made under his direction, with the view of stocking those streams with fish' (cited in Day, 1868a : 62). The Governor also endorsed Day's recommendations for the management of the eventual hill stream and lake

fisheries (closed seasons, etc.) and he opened the way for further transfers of fish. In fact, Lord Napier was probably more sympathetic to Day than the latter would care to admit, for he already knew Day's eldest brother and had, in his capacity as Ambassador at St Petersburg in 1860–64, provided 'from time to time very valuable information' for William Ansell's book on the Russian Government in Poland (Day, W., 1867).

Day arrived in Kurnool on 4 September (Day to Shaw, 5 September 1866, Q 654). In an undated draft to Shaw (Q 659) he wrote : 'At the moment we are in a very uncomfortable state but had we any idea how long we might anticipate being here we could make ourselves a little more comfortable . . .', which confirms that he brought his wife with him. The worst cholera month had been June (103 dead). By August the numbers had dropped to 13 cases (8 deaths), rising a little in September (29 cases, 20 deaths) but almost disappearing in October. Day decided to make a proper investigation of this outbreak and those in preceding years and to hazard some views on the causes, precautions and cure (notes and draft report, Q 659). He found that only five years in the past twenty-two had been free of this scourge ; that an average of over three hundred deaths occurred annually ; that the army latrines were an absolute disgrace ; and that human excrement in the streets was probably spread, together with the disease, by the trampling of untended domestic animals. Buffaloes, he noted, were the chief scavengers of the town and soon 'cleared every vestige of filth' from the ditch near the jail where the prisoners were taken twice daily for 'the purposes of nature' ; he also noted the proximity of lavatories to wells (Q 659). Since it was another twenty years before the causative bacillus was identified (and Robert Koch's findings even then were received sceptically), Day was able to make little progress beyond deploring the lack of hygiene. As a medical student in London he must have seen something of the second great outbreak in England (1848–49, with over fifty thousand deaths in England and Wales) and was probably aware that, at the time of the Kurnool outbreak, the disease was once more taking its toll back home (fourteen thousand deaths ; see Longmate, 1966) without any real advance in its prevention and cure.*

Day wrote up his cholera notes and sent them on 29 September to his friend and fellow surgeon William Chipperfield (1822–73) in Madras, promising a complete article shortly (Chipperfield to Day, 2 October 1866, Q 659) (published, Day, 1866). Earlier that year Chipperfield had told Day that he was trying to 'resuscitate' the *Madras Quarterly Journal of Medical Science* and he suggested that Day write an article on the fish experiment for No. 20 (Chipperfield to Day, 4 August 1866, Q 654) (published, Day, 1868a). Chipperfield's ambitions for the *Journal* bore fruit and he took over editorship from William Cornish in 1869, issuing it monthly (with appropriate change of title) until his death in 1873, when publication ceased (Crawford, 1914 : 457).

* Pieter Bleeker, now retired and back in the Netherlands, was also involved with this cholera outbreak. His short pamphlet *De Cholera. Wenken voor Allen* of 1866 was so popular that it went to twelve printings in a month and the drug that he recommended (essentially laudanum) became known as 'Bleeker's drink' (see Grendel, 1967; also Bleeker's autobiography, English version in Lamme, 1973).

While Day was in Kurnool the Governor, Lord Napier, made a visit to the famine district of Ganjam in the north of the Presidency and reported his findings in a Minute (cutting, 1 September 1866, Q 659), which drew scathing comments from Day. Napier gave all his sympathy to the *ryots* (landed peasantry), seeming to ignore the equally desperate plight of the landless labourers, vagrants, medicants and small traders; he pointed out that unfortunately human lives were more easily replaced than those of cattle, so that the relatively good condition of the local cattle was something of a blessing; and he criticized the Europeans (implying the medical officers) for their lack of 'spontaneous zeal' in coping with the situation. This latter was exacerbated by Napier's pronouncement on the condition of the Civil Dispensary at Coimbatore (newspaper cutting, after 20 September 1866, Q 659). Incensed by all this, Day scribbled some rather uncomplimentary doggerel in his cholera notebook (Q 659) and may well have contributed to a newspaper article taking Lord Napier to task and pointing out that, as a result of the 'niggardly policy of the Madras Government', the Presidency enjoyed the 'unenviable distinction of receiving Medical Officers of the lowest possible standard . . .' (undated newspaper cutting, Q 659) (see also p. 102 below).

Day was at that time waging his own battle to claim back what he had lost by staying at Ootacamund, being the difference between his actual pay and what he would have received if he had been in medical charge of a Native Regiment or, after May, had he taken up his staff appointment as Medical Storekeeper at Madras. He explained all this to Patrick Grant, saying that he had lost Rs 110 per month by staying on to carry out the introduction of low-country fish, but 'I have never objected to this. I was zealous to be successful . . .' and wanted to 'complete the work for the Government which had as I thought appreciated the trouble I had been at . . .' (undated draft to the Collector at Coimbatore, Q 654). At the end of November Day made a formal claim and in February the following year, perhaps to his surprise, he received Rs 800, having received some compensation earlier (28 February 1867, No. 163, MGPD.Proc., also Q 658).

In early October Day still had no news of when he might be relieved and his friend Chipperfield could get nothing out of Shaw 'who does not encourage questions of this kind' (Chipperfield to Day, 2 October 1866, Q 659). At last, on 21 November, he was finally ordered to take up his post of Medical Store Keeper in Madras (28 February 1867, No. 163, MGPD.Proc., in Q 658).

Fishery Work 1867–74

With his return from Kurnool to Madras, Day was about to embark on the third phase in his Indian career – that in which his fishery work was at last valued more highly than his contribution as a surgeon. Prior to his move to Cochin in 1859, natural history had been merely a subsidiary interest. After Cochin, and with the production of the *Fishes of Malabar* and the implementation of the Nilgiri scheme, Day's fishery interests were given grudging recognition and support, although much depended on the Governor and his officials. In the final phase, Day was able to realize his ambitions, largely because of new policies that aimed to develop

India's natural resources. Where in 1864 the Madras Government could turn a deaf ear to warnings that many Indian fisheries were becoming ruined through bad management (TIF : 79), three years later the Secretary of State felt obliged to take action. Day might complain to Buckland of the 'deep seated liberal views' lately imported into India (23 September 1866, Q 654), but in the end he was to gain from them.

Meanwhile he carried out his duties as Medical Store Keeper and in May 1867 was also appointed Professor of Materia Medica at the Medical College in Madras (MAL., 1 July 1867). The College was run and staffed by the Medical Department and the Principal was Surgeon-Major George Smith (who had written to Day three years before about a possible professorship – see above, p. 33). There were nine professors, of which Chipperfield was Professor of Medicine and Clinical Medicine, Furnell Professor of Anatomy and Physiology, and Bidie Professor of Botany, Therapeutics and, until Day joined the staff, Materia Medica ; in that year, too, Chipperfield became Professor of Ophthalmic Surgery. This was no doubt a diversion for Day from his routine duties and it brought him at least a little way towards natural history, but his mind was firmly set on fishes.

In July Day took his annual sixty days' privilege leave and revisited Ootacamund, ostensibly to see the results of his fish planting experiments (Day, 1868a : 53), but perhaps also to take Emma away from the heat of Madras prior to the birth in October of their second daughter, Edith Mary. This time Lord Napier seems to have shown more interest in fish, for he made arrangements for Day to transport live gouramies from Madras up to Ootacamund (8 November 1867, No. 69, MGPD. Proc.). Ten fishes from the large pond in front of Government House in Madras, originally imported from Mauritius, were dispatched in three casks to the railhead at Mettapolliam (Price, 1908 : 36). On 27 August Day supervised their laborious carriage by porters up to Ootacamund, four of the fishes surviving the journey (Day, 1867a). On 2 September the fishes were ceremonially released into the Ootacamund lake by no less a person than Lady Napier (Price, 1908), which suggests that the new Governor was taking a more positive view of Day's fish activities ; no doubt seven months in Madras had enabled Day to make his knowledge and ambitions better known.

Unfortunately, almost no manuscripts date from this period, but when Day (*Fishes of India* : Preface) later stated that 'In consequence of this [Cotton's warning of the fisheries' decline] I was directed by the Government to visit the "anicuts" or weirs of Madras Presidency . . .' one can be fairly certain from previous examples that the Government's decision was consequent upon the strong promptings of Day himself. In fact, the most serious warnings on the state of the fisheries seem to have been those of Colonel George Haly (1809–71), who had noted the effects of irrigation barrages on spawning migrations. Haly knew the fisheries well (TIF. : 310) and eventually wrote to the Secretary of State, enclosing a letter from Sir Arthur Cotton, the contents of which were circulated to many officials, including Day (TIF. : 63).

For Day this was the chance he had been looking for. He was the obvious person to carry out a survey and on 11 October 1867 he sent a memorandum offering his

services (TIF. : 111). Day said that he would 'proceed to any one of the rivers which might be decided upon' but the offer was declined (see 17 August 1869, No. 253, MGPD.Proc. – in Q 658). For nine months he waited impatiently, but on 27 May 1868 he was finally invited to undertake the survey. Day wasted no time ; the 'evening of June 16th found me in a railway carriage *en route* for Trichinopoly' he later wrote (TIF. : 111), where he would inspect the first major river, the Coleroon (Cauvery). By the end of September he had completed this southern survey and, after a few days only in Madras, began his progress northwards to Ganjam, on the boundary of Madras Presidency, and thence to Chilka lake (4 February 1869, Nos 87 and 88, MGPD.Proc., in Q 658). He returned to Madras in November and in December and January (1869) he made a full investigation of the Orissa fisheries (Day, 1868e ; capture of Madras specimens 15 November 1868 – Day, 1868b : 149 – 156 ; also, lists of Madras specimens, dated Madras 9 and 10 November 1868, BMNH.MS.Z.). Possibly during November he pressed for a more extended fishery survey beyond merely Madras Presidency as a result of what he had seen in Orissa. The response seems to have been fairly quick and on 11 March 1869 a Resolution from the Government of India ordered Day's employment 'on special duty of making a comprehensive enquiry into the fish and fisheries of India' (quoted in GI.DARC. Proc., 22 July 1871), the Resolution being approved on 17 June (loc. cit.). From now on, Day was free to range throughout British India, including Burma, and his dream of being a professional naturalist was a reality.

During his stay in Madras (November 1868 and February 1869) Day drew up Reports for the Madras Government on the state of the fisheries to the north and south of Madras and presumably worked on his collections. He later sent a summary of his findings on the Madras fisheries to the Madras Government (30 April 1869, No. 658, MGPD.Proc., in Q 658) and a report on the Orissa fisheries to the Government of India (8 March 1869, in Q 658).

In early April 1869 Day was in Calcutta (draft to T. C. Jerdon, 10 April 1869, Q 650) and had perhaps been there for at least a month since on 3 March he was proposed (by John Anderson, seconded by H. Blochmann) for membership of the Asiatic Society of Bengal and was duly elected on 7 April (MS.Proc., Asiatic Soc. Bengal). He was granted permission to continue his studies on the Society's collections (Day, 1869b : 511), which resulted in a paper on the fishes of the Calcutta Museum, published in three parts in the *Proceedings* of the Zoological Society in 1869 (11 November, 25 November, 9 December). The library possessed many of the original drawings of Hamilton-Buchanan, which Day used in his studies (e.g. on the Orissa fishes – Day, 1869a) and he promised to devote a separate paper to them (published two years later – Day, 1871a). However, his plans were to revisit Burma after some thirteen years and to inspect the fisheries there. He hoped to leave on 22 April but there were delays (letter to Jerdon, loc. cit.) and it was not until 11 May that he reached Rangoon (TIF. : 254). A fortnight later he set off for Moulmein but had the misfortune to be stabbed in the foot by the spine of a large sea catfish (*Arius*). Unable to remove the broken spine from its point of entry, he took his penknife, incised the sole of his foot, and drew the spine out that way (newspaper cutting on back end-paper of LS. 1 ; also, his Report to the

Secretary, Government of India Public Works Department, Q 658).* After a short rest in Moulmein he pushed on to Een gay gyee lake in time to witness the last day of the annual fishing occasion. By the end of August he was back in Rangoon and from there he went to Pegu and Sittoung (mid-September). All the while he collected specimens and much information of local interest (TIF. : 254 *et seq.*). He presented his report on the freshwater fisheries on 30 September, and on the marine fisheries on 7 December 1869 (Q 566). One reaction to his report was an irate official letter from Major-General A. Fytche, Chief Commissioner and Agent to the Governor-General, British Burma. He disagreed with Day's suggestion to auction fishing rights ; he found Day's description of the existing apportionment of fishing rights, 'the letting by favour system', most objectionable ; Day's proposal for mesh-size restriction for fishing nets was impractical ; the report contained 'many uncalled for remarks and assertions' ; and so on. The General then castigated Day for apparently arriving in Burma 'firmly impressed with the idea that he would be resisted everywhere, and by everybody . . . [he] moved over the country without knowing a word of the language [and] was completely in the hands of his interpreter . . .' (11 May 1870, GI.PWD.Proc., in Q 658). Day was probably delighted, therefore, to find a letter to one of the newspapers commenting on the report that General Fytche was preparing a *Pali Dictionary* ; the writer, calling himself Philologist, professed amazement since 'we believed that the General had not even a colloquial knowledge of the Burmese language . . .' (undated newspaper cutting, Q 658).†

Day probably returned to Madras in early October 1869. In the draft of his letter to Jerdon (cited above), he had spoken of his plans to visit the rivers of Assam, but this seems to have been abandoned (TIF. : 389). It may have been in this period that his wife died, but we have no indication other than the year (DNB.) and there is no hint of her death in the documents available (ER.). At this time Day was trying to get permission for a visit to the Andaman Islands. Towards the end of the year this was granted (13 December 1869, Q 658) and he arrived in the Andamans on 29 December, remaining there until 24 January and collecting a mass of data on the fish and fisheries (Day, 1870b). In his report on the fisheries of the Andamans‡ (February 1870, presented to the Public Works Department, Irrigation, in Q 658) Day commented on the organization of the fisheries in a way that seemed to throw discredit on the Superintendent of the Penal Settlement and on the officer in charge of the fisheries (not named but by deduction Colonel Henry Man or Captain Slaughter). Day was thanked for his report (21 February 1870, handwritten letter, Q 658), but Colonel Man evidently objected strongly and sent

* On an earlier occasion he had been bitten by a sea snake. Sending the specimen to Wilhelm Peters in Berlin, he wrote that it was 'the one which seized me by the heel in Orissa in 1870 and drew blood with both fangs. The natives thought I was sure to die.' (Day to Peters, *c.* 13 April 1878, ZMB.MS.)

† Against the cutting Day wrote 'Mr Inglis says Gen. Fytch speaks the language well, certainly he ought as he is reputed to have kept many "walking dictionaries" the old goat.'

‡ Like others before him, Day was fascinated by the manners and customs of the Andaman negritos and his report contains almost as much ethnology as it does ichthyology, largely drawn from a Mr J. Homfray who acted as interpreter. In his classic account, Radcliffe-Brown (1922) recognized the pioneer work of E. H. Man (Assistant Superintendent at Port Blair) and M. V. Portman of the 1880's, but either overlooked or dismissed Day's (Homfray's) earlier contribution. Day's account also appeared in the *Proceedings* of the Asiatic Society (1870c).

an explanation to the Government, which was balanced against Day's allegations and led to the Governor-General relieving Colonel Man or Captain Slaughter of the censure which had been passed on them (10 January 1871, handwritten letter, Q 658). The Secretary of State went further, finding the inaccuracy of Day's hasty statements completely exposed by Colonel Man's self-vindication ; he wished that the severe censure on the latter had been formally withdrawn (22 July 1871, GI.DARC.Proc., Index 5, Pros. 2).

On his return from the Andamans Day seems almost immediately to have put in an application for sick leave (at least by 21 February 1870, Q 658 ; ten months from 19 March 1870 – LPR.). His request was granted (GI.DARC.Proc., *Abstract Tabular Statement*, 8 January 1876), but if this was on account of the condition of his foot, then it is most curious that he chose to return home, not by ship from Madras, but by way of an overland journey to Mangalore, apparently for the purpose of examining fish and fisheries on the way. He crossed by rail to Beypore on the Malabar coast, then to Calicut, with a quick visit to Vithry in the Wynaad range of hills, subsequently reporting on the fishes that he had collected (Day, 1870a).

Day stayed in England until 27 September 1870 (GI.DARC.Proc., loc. cit.) and during that time he made two, if not five, visits to the British Museum (lists of specimens, BMNH.MS.F.) where 'Dr. Günther, F.R.S., at once accorded me leave to examine the magnificent collection of fishes' (Day, 1871b : 97). This implied warmth between Day and Günther is probably an illusion, being intended merely as a contrast to the earlier refusal of the Curator of the Madras Museum to allow Day to examine the collections.* Relations between Day and Günther were by now rather strained, judging by the sharp jabs that Day was receiving from the *Zoological Record* ; however, Day had yet to see the 1869 issue, the most critical of all and the one that precipitated bitter exchanges in the *Proceedings* of the Zoological Society (see below, p. 65).

During his sojourn in England, Day may well have taken stock of his position. Although there still remained a number of Indian fisheries which he had not yet examined, his secondment for this work was only a temporary one and he was still officially the Medical Store Keeper at Madras. He had some years to go before retirement and he needed reassurance that he could continue his work on fishes. The obvious course was to press for a more permanent appointment, possibly as Inspector of Fisheries since little interest had been shown in his earlier suggestion of resurrecting the post of official Naturalist. He may have hankered after a post at the Museum in Calcutta, to which John Anderson had been appointed Curator and later Superintendent, but the post of Assistant Curator had been filled by James Wood-Mason the previous year and it was unlikely that any further vacancy would arise. Day therefore pursued the idea of creating an official fishery appointment and perhaps at this time began sending memoranda and letters. It seems very likely that he paid a personal call on the Secretary of State for India (the

* At the time Day (1868e : 2) had commented : 'The fishes of the Madras Government Central Museum will not be included in this series of papers, as permission to examine and describe them has been refused . . .' The Superintendent, Captain J. Mitchell, subsequently died of dysentery and Day's friend George Bidie took his place.

Duke of Argyll) to present his case. Meanwhile he returned to India to continue his fishery work and to await a response from the Government.

When it came, late in July, the response was all that Day could have wished for. The Governor-General in Council formally appointed him Inspector-General of Indian Fisheries (GI.DARC.Proc., 22 July 1871). When not required to be present at the seat of Government, he was allowed 'to travel about the country and collect information on subjects connected with the Department' (*Fishes of India*, Preface). The appointment was given as temporary, but it seems certain that it was not intended to abolish it during Day's tenure. From his substantive appointment as Medical Store Keeper, Day was receiving a salary of Rs 1150 plus Rs 200 for expenses per month. In December he was due for promotion to Surgeon-Major at Rs 1390 plus Rs 200 for expenses. It was now decided that he should receive Rs 1500, with Rs 5 per month for travelling, the appointment to take effect from 9 August 1871.

For the rest of that year Day examined the fisheries of northern India, first of the Ganges, Jumna and some tributaries of the Indus (Day, 1871d : 703) and, at the end of the year, the rivers of Sind northwards to Beluchistan (see Day, 1880 : 224). When not out on expeditions, Day divided his time between Calcutta (the seat of the Government) and Simla (the Government's summer retreat since the days of Lord Amherst). In Calcutta, Day had the benefit of the Museum collection and the library of the Asiatic Society and he may have kept his own collections in Calcutta too. During 1871 he also completed his work on the Hamilton-Buchanan drawings in the Society's library (Day, 1871a). Some of his books (Q 652, LS. 2) bear a printed label giving his address at this time as Oakfield,* Simla, and he probably did most of his writing at this pleasant station ; the second volume of his bound reprints in the Linnean Society (LS. 2) is marked in ink on the flysheet 'Francis Day Sept. 3rd 1872 Simla'. In Calcutta his address was 4 Wood Street (Day, 1871e).

Shortly after his appointment, Day applied for three months' leave 'on private affairs' from 15 September 1871 (GI.DARC.Proc., *Abstract Tabular Statement*, September 1871). The application was refused, but Day renewed it on 11 January the next year, asking for three months' leave of absence on what were by now 'urgent private affairs' with effect from 15 March and this was granted (loc. cit., February 1872), but with the loss of pay. On 6 March 1872 Day was in Bombay (ZMB.MS.), but by 18 April he was just about to sail from England back to India (BMNH.MS.Z. ; *en route* 5 May – ZMB.MS.). The urgent affairs, which had brought him to England

* The name recalls a novel about India by Punjabee (pseudonym of William Delafield Arnold, brother of the poet Mathew Arnold) entitled *Oakfield or Fellowship of the East*, published in 1853. If an allusion was intended, then it affords an interesting clue to Day's attitudes since the book is less a novel than a tract against the pettiness and low moral standards of the British in India. The Englishman's duty was to 'help in the work, or try to set it going, of raising *European Society*, the great influence of Asia, first from the depths of immorality, gradually to a state of Christian earnestness' and '. . . for any purpose beyond protection to life and property . . an eating and drinking, money-getting community is inefficient'. Oakfield is not included in the list of Simla houses given by Carey (1870 : 34), neither does it appear on the 19-sheet (24 inch/mile) Simla and Jutog Survey map made in 1873–74 (published Calcutta, 1875), nor on the 8-sheet (16 inch/mile) Simla map of 1897 (IOR. F.II 23 and 20). This further suggests that the name Oakfield was given by Day, presumably to an existing house.

for these short weeks, were evidently his marriage to Emily Sheepshanks (see below, p. 95).

By 1873, Day had covered almost all the inland waters of India and Burma and he drew up an official report (Day, 1873a), in which he summarized his previous account of the freshwater fishes and fisheries (Day, 1871e), as well as his eight earlier reports (south of Madras, north of Madras, Orissa and lower Bengal, Burma, Andamans, North-west Provinces, Punjab and Sind). In the same year he also wrote a paper on the marine fishes of India and Burma (Day, 1873b). From these reports one can judge the enormous amount of travelling that Day had to undertake at a time when the railway network was still poorly developed and much of his exploration had to be on horseback, on foot or by boat.

Day's work on the fisheries, and the recommendations that he proposed (fish ladders, conservation, etc.) met with some hostility, not so much from those who might lose by any new legislation, as by those who seem to have begrudged Day's opportunities. A short article in the *Pioneer* (December 1871) noted Day's activities in Sind and commented: 'If the Inspector General of sticklebacks has gone there to make collections for the Museum, we congratulate the country on the expedition; but if he has gone to examine and report upon the "wholesale destruction" which it is pretended is going on, we had rather Dr Day had been less expensively employed'; local canal officers could do the job equally well (Q 658). Colonel Haly, who had to some extent paved the way to Day's appointment by writing on the state of Indian fisheries in 1866, now took Day to task over his Burma trip. The Colonel could see no reason for Day's investigation since there was no part of the Empire 'where piscatory nature can be better left to its natural resources' (2 July 1869, *The Overland Mail*, cutting in Q 658). Haly was obviously piqued that 'it may come to pass that the credit for improvements [to fisheries] which I have proposed and advocated be given to another . . .', although he claimed he would rejoice at any benefits accruing to India (his letter, 10 September 1870, to *The Homeward Mail*, cutting in Q 658).

Day was by now 43, remarried and employed in exactly the kind of work he had always wanted. The Government perhaps reasonably expected that he would now settle down in his new post and that the torrent of memoranda and the precedents that they created would cease. Day, however, had conceived a further scheme and when the time was ripe would begin again the round of lobbying and persuasive letters that had succeeded so well in the past. He had decided to write a definitive work on Indian fishes. Although he continued with his fishery investigations for a further two years, visiting almost every part of India, the 'book' was uppermost in his mind and the collections that he made were to form the basis of it.

The Fishes of India 1874–78

The first intimation of Day's intention to produce the *Fishes of India* comes in a draft of a letter to Thomas Jerdon (1811–72), fellow surgeon, naturalist and author of handbooks on Indian mammals and birds. Jerdon had already written on the freshwater fishes of southern India and he had produced a catalogue of

fishes (Jerdon, 1848–49, 1851). In 1865, Day believed that Jerdon's catalogue would be expanded 'in his forthcoming work on the "Fishes of India" ' (FM., Introduction : xxx). Four years later, however, Jerdon had evidently given up authorship in favour of Day since the latter wrote to him from Calcutta to say that,

> As to my work on the fishes of India I shall not attempt to publish it before I leave the service under two years from this time if my 10 months of service in the hills is not taken off, anyhow not much above 2½ years. The book will I think be in (4) four volumes the size the same as your manuals but with the difference I intend giving a copperplate illustration of one of each genus up to 100 genera or thereabouts. I send a copy of one plate (first proof) for you as a sample, about 40 are done. . . . I am going to so much trouble that I could not associate anyone with myself in the publication. . . . I could not publish any portion of my fishes of India [until the Reports on fish and fisheries were completed].
>
> (10 April 1869, Q 650)

This letter throws a great deal of light on the origins of the *Fishes of India*. The project had evidently been in Day's mind for some time and he had gone so far as to produce 40 of the plates. Possibly, these were taken from the *Fishes of Malabar* (32 fishes), together with others that he had had done in England by other printers, since it seems unlikely that he had managed to fill 40 plates with the number of figures that crowd each plate of the *Fishes of India*. In one of the bound volumes of Day's reprints (Eg. 14) Day not only included plates from the *Fishes of Malabar* (18 species, of which 12 are coloured), but the chromolith of *Serranus bontoo* (see above, p. 26) and 5 unpublished figures (1 coloured, *Rasbora neilgherriensis*) which seem to have been intended for his papers on Nilgiri and Madras fishes (Day, 1867a, b, 1868c). This would bring the total to 38 and perhaps there were one or two further drawings in preparation. Day drew the fishes on 42 of the plates for the *Fishes of India*, but they were engraved in England and there is no indication that he ever had plates made for him in India.

Day was becoming increasingly confident in his knowledge of Indian fishes. He had travelled through much of the country and had unlimited opportunities for visiting the rest. He had amassed a large collection, of which only a small part had been sent to the British Museum. Only two years after the trout experiment he issued a catalogue of Indian freshwater fishes (Day, 1868e, 1869c) and in 1871 he wrote an official report on the freshwater fishes and their fisheries, enlarging on it and including Burma two years later (Day, 1871c, 1873a). By now he was ready to issue a report on the marine fishes and their fisheries (Day, 1873b) and it was an interleaved copy of this paper (Eg. 11) that served him as a basis for compiling the *Fishes of India*. On the first spare page of this copy he wrote,

> This list of the sea fishes known in India was drawn up in 1873. Since that period a revision of my collection, inspection of fishes in the B.M., assistance from Bleeker, Schlegel, Le Vaillant, Sauvage, Peters & Hubrecht has largely increased the list, which has been also augmented by the gift of Sir W. Elliot's

drawings & some of Jerdon's specimens. The 'Fishes of India' however must necessarily be far from complete – The two great regions from which species unrecorded in this work will be probably discovered are Hill ranges and marine & estuary forms.

(Eg. 11)

Day anticipated retiring in 1871 or 1872, but his calculations seem to have gone somewhat awry, since he did not retire until November 1876, nearly five years after the date anticipated in his letter to Jerdon. This probably determined him not to wait but to begin work on the *Fishes of India* while still in Government service. He must have been aware that, however much he might argue with Günther from a personal knowledge of Indian fishes, a work of the scope and standard that he was planning could not hope to escape criticism if it were not also based on the British Museum collections. His decision to return to England to write the book had already been taken during his leave of 1872. In a letter to von Martens dated 5 May 1872, and written on board ship as he returned to India, he spoke of his 'rare opportunity of collecting fish' and of his 'hope next year to return to England for the purpose of compiling a Manual of the Fishes of India' (ZMB.MS.).

In anticipation of his return to England, Day shipped his collections home, a decision he had apparently taken during his leave of 1872 since he wrote to von Martens in Berlin that 'my collections go to Europe so I cannot forward them on to Berlin until my return to England' (5 May 1872, ZMB.MS.). By October 1873 his fishes were already in England and he recorded his hope 'shortly to commence a thorough re-examination of my collection of Indian fishes now in England (numbering about 12000 specimens in spirit, besides skins) . . .' (Day, 1873e : 747). There is no indication of where he stored this huge collection and one would imagine that he would have been anxious to have seen it on arrival. His last opportunity would have been in 1872 when he rushed home to marry Emily Sheepshanks, but his application for that leave was made as far back as September 1871 and it seems unlikely that he would have parted with his reference collection so early. Possibly Brisbane Neill supervised the storage of it in Day's absence.

Day may well have taken the opportunity of sounding out the Secretary of State while he was in England, but it was not until the latter part of 1873 that he drew up a memorandum to the Government of India. The proposal that was forwarded to the Secretary of State (30 October 1873, GI.DARC.Proc.) outlined the following scheme.

1. From 1 May 1874 Day's salary would be stopped. Instead, he would be granted two years' leave of absence (to count as service in India) at a monthly salary of Rs 1000, but he would have to meet the cost of travel to England (£64 *fide* Board of Revenue – *Proceedings*, 4 June 1866, Q 658).
2. Day must compile in these two years 'a complete Manual of the freshwater and sea-fishes of the Indian Empire and Ceylon, fully illustrated'.
3. The first volume should be issued 'during this period, the second as soon afterwards as practicable ; Government subscribing to 250 copies of the manual at Rs 50 a copy . . .'

Financially, the terms do not seem to have been too generous, Day losing Rs 500 a month and being faced with the expense of shipping home his huge collection and renting a house. However, the scheme was approved by the Secretary of State and by May 1874 Day was in England (17 July 1889, CE.) and in June was settled in Hartland House, King's Road, Richmond (24 June 1874, BMNH.MS.Z.). His chief problems were now to compare his material with that in the British Museum and to arrange for the plates for the book to be made.

At this time the Departments of Natural History were still housed within the British Museum building in Bloomsbury, although plans for the new natural history museum at South Kensington (the present building) had been approved and construction had started the previous year (Munro, 1931). The state of the fish collections, in spite of Günther's work of arranging and cataloguing, was if anything worse than on Day's previous visits because of overcrowding. The spirit collections, chiefly comprising those of fish, reptiles and amphibians, were relegated to the Spirit Room in the basement of the east wing where 'conditions of light and temperature were most suitable for the preservation of the specimens, but less so for the comfort and health of the persons compelled to work in that locality . . . the stone flags of the floor were at times covered with damp or water, causing the wood-work of the bottom of the cases to rot, and destroying unfortunately many of the labels on the bottles . . .' (Günther, 1912 : 5). The Zoology Department accommodation, on the other hand, was in the semi-basement of the north-west corner of the building. A 'visitor's impression' was given by Philip Sclater (1877).*

> . . . descending (with care) a flight of darkened steps, he will find himself in the cellar, which has for many years constituted the workshop of our national zoologists. Two small studies partitioned off to the left are assigned to the keeper of the department and his assistant. The remaining naturalists are herded together in one apartment commonly called the 'Insect-room', along with artists, messengers, and servants. Into this room is shewn everybody who has business in the Zoological Department of the British Museum, whether he comes as a student to examine the collections, or as a tradesman to settle an account. . . . No lights are allowed, and when the fogs of winter set in, the obscurity is such that it is difficult to see any object requiring minute examination.

Bowdler Sharpe, who joined the Department in 1872, recalled 'the gloom of this underground dungeon' and also commented on the difficulty that visitors had in examining the material, even a written application two or three days beforehand not guaranteeing that the curator in question would be available to bring out the specimens (Sharpe, 1906 : 84). Thus, Day found that he had to write to Günther forty-eight hours in advance, giving a list of exactly the material he wanted to see, deduced from Günther's *Catalogue of Fishes*, a stricture that Day was to

* Secretary of the Zoological Society for over forty years, Sclater held an important place in British zoology (see the mémoire by Goode, 1896; also *Who's Who*, 1905 : 1434). Bowdler Sharpe (1906) remembered his extreme kindness and encouragement to a young man entering on a scientific career, but Günther clashed with him several times (see p. 105 below) and firmly squashed his idea to sandwich student rooms between galleries in the new Museum at South Kensington, the specimens in the show cases to be accessible from the back as well as from the front (Gunther, 1975 : 346).

question rather pointedly two years later (Day to Günther, 5 December 1876, BMNH.MS.Z.), but which he failed to annul. The battles that arose over questions of access to the collections formed an unpleasant background to the scientific feud conducted by Günther and Day in various journals (see p. 69).

On Day's previous visits to the Museum, Günther had been either temporarily employed or, after 1862, had been Senior Assistant to the Keeper, J. E. Gray. Günther's position at the time is emphasized in a letter written by Neill to Day in 1866, saying that he had called on Gray 'who at once said "Günther has nothing to do with buying specimens, it is my business" so I presume they are no more friendly than before' (Neill to Day, 8 June 1866, Q 654). In May 1869 Gray suffered a stroke, from which he never recovered the use of his right arm and leg. To assist Gray in his administrative duties, the post of Assistant Keeper was created, taken first by his brother G. R. Gray until his death in 1872, and then by Günther. By the middle of 1874, when Day arrived in England, J. E. Gray's health was precarious and in December of that year he was compelled to resign after fifty years with the British Museum. In February 1875 Günther was appointed Keeper and for the next fifteen years he was able to exercise virtually complete control over Day's access to the British Museum collections.

For a year and a half Day lived at Richmond and, judging by the requests that survive (BMNH.MS.Z.), applied to examine British Museum material at least once a week. From these lists it is possible to follow very closely his progress with the book. During this time he corresponded with workers abroad and he paid visits to Berlin and Paris (January/February 1875) and to The Hague, Leiden, Berlin and Paris (May/June 1875), where he met Peters, Vaillant, Sauvage, Bleeker, Schlegel, Hubrecht and many others (letters Day to Peters, 17 January and *c.* 8 February 1874 ; 4 May and 26 June 1875, ZMB.MS. ; letter Day to Léon Vaillant, 1 March 1875, MNHN.MS.). According to a letter to Herman Schlegel, Day visited Leiden at least once a year from 1874 to 1879 (18 February 1879, RMNH.MS.). From these visits he concluded that the British Museum was unique in its obstructive attitude to visitors. But however large and accessible other museums might be, the finest collection of fishes from India, apart from Day's own material, was that at the British Museum and Day was obliged to swallow his pride and to write his weekly note to Günther beginning 'Sir, I should feel much obliged by being allowed to see . . .' (BMNH.MS.Z.).

Towards the end of 1875 Day decided that his Richmond house was too cramped and by November he had taken Kenilworth House at Pittville, on the outskirts of Cheltenham (Day to Peters, 28 November 1875, ZMB.MS.). Overlooking pleasant lawns and clusters of trees, Kenilworth House is still the most imposing of a row of large, detached and pretentious Victorian mansions once tenanted in their retirement by the more wealthy of the professional classes. In February the following year Day left Hartland House and moved his huge collections to his new home in Cheltenham, a town that he already knew well from his stay in 1864 – 65. Although this now meant a four-hour train journey to London, his visits to the British Museum were no less frequent, to judge from his applications to Günther (BMNH.MS.Z.).

The writing of the book was progressing fairly well. By August 1875 the first part was printed and a copy had been sent to India through the India Office (8 January 1876, GI.DARC.Proc.). By January 1876 Part 2 was virtually complete and Day confidently expected its publication by the agreed date, the end of April (loc. cit.). His contract had been to complete the writing of the book in two years from 1 May 1874, when he would then be required to return to India, the second volume to be issued 'as soon afterwards as practicable' (see above). As with the *Fishes of Malabar*, however, it was the plates that held up the publication.

Day's original plan had been to illustrate the book with woodcuts, which he estimated would cost £800, but 'the engraver . . . failed to keep his engagement' so Day sought the services of George Henry Ford (1809–76) (8 January 1876, GI.DARC.Proc.), perhaps the most talented of all natural history artists then in London ; his ability to foreshorten the colour-markings on a coiled snake drew all of John Ruskin's admiration (Gunther, 1930). Ford had been associated with the British Museum virtually since his arrival in London from South Africa where he had been employed as artist for Andrew Smith's *Illustrations of the zoology of South Africa* (1838–47). He had worked under Gray but later came to illustrate much of Günther's work, including *The reptiles of British India* (1864), *The fishes of Zanzibar* (1867), *Die Fische der Südsee* (1873 *et seq.*) and many short papers in the *Proceedings* of the Zoological Society. By 1874, Ford had been illustrating works for the British Museum for over thirty-five years and Günther clearly believed that he had a rightful monopoly on Ford's time.

How Day managed to steal Ford's services from under Günther's watchful eye remains a mystery ; certainly Day's action did not go uncontested (see p. 79 below). Even Günther's brother-in-law, William M'Intosh, felt obliged to plead the loss in marriage of his artistic sister as grounds for begging the temporary release of Ford to illustrate his work on nemerteans and polychaetes (Gunther, 1973). By November 1874, however, Day had made a firm proposition to Ford and the latter had promised that he would 'produce the 40 plates by March next, also the second 40 by the time mentioned, September 1875. I have no doubt, if you supply me with the material, that I shall be enabled to complete the plates for your work by the time specified'. (8 January 1876, GI.DARC.Proc.) Ford had originally been engaged to draw about eight hundred species (for £1900), but Day later increased this to eleven hundred species (for £2400). The Government of India was no doubt alarmed by this news. In the original Minute Paper drawing up the terms of Day's employment on the book, the size of the proposed expenditure, as well as the cost of Day's fishery work during the previous three years (£5850, including salary), had been carefully spelt out ; his salary for two years would be £2400 and the book would cost the Government £1250, making a grand total of £9500 since Day's appointment as Inspector-General of Fisheries (24 November 1873, RDI.). The money for the book (£1250) was evidently the cost of 250 copies at Rs 50 each, but it is not clear whether some or all of this was available to Day in advance for the plates. Certainly, it would not be enough and Day sought other means of raising money.

In November 1874, Day wrote to Peters to say that he hoped to be able to tell him what would be done with his collections, but,

> As yet I have had no answer from the India Office, an Official has been sent down to see what I have, but until I hear definitely I can do nothing with the Reptiles and Crustacea . . . I will write again as soon as I know what the Indian Govt. decide upon.
>
> (23 November 1874, ZMB.MS.)

Day had apparently offered to sell to the India Office a collection of 4000 fishes for exhibition in the new India Museum (opened at South Kensington the following year) and for a while this offer seems to have been accepted (inferred from Minute Paper No. 910, 24 December 1875, SCHC.). However, this scheme did not succeed and in December 1875 Day offered a second and smaller collection, which was again turned down (Minute Paper No. 910, loc. cit. ; see below, p. 120). The Secretary of State for India 'considered that neither the expense of the bottles in which to exhibit them, nor of spirit for their preservation, could be rightly debited to the resources of India' (Anon., 1876 : 334). On reflection, the Secretary of State may have realized that, if he were to refuse the money for the extra plates – and the Revenue Department would almost certainly insist on this – then he must also refuse Day's roundabout method of making the Government of India subsidize the plates through the purchase of the specimens.

Day next tried to interest the British Museum, and in an undated draft to Richard Owen at the British Museum (possibly dating from late 1875, Q 650) Day stated: 'As I propose having my Fishes of India coloured but object to expending any more private funds on the work I propose parting with my 1st duplicate collection for that purpose. Prior to offering out of the country I enclose you a list with request. Should the Trustees of the B.M. wish to obtain them they may do so for £750 which offer unless accepted within a month must be understood to be withdrawn.' The offer was not accepted. Owen would naturally have consulted with Günther and since a number of substantial collections were purchased in this period, for example from the Godeffroy Museum in 1873 and 1877, the lack of interest on this occasion was probably not due to lack of funds.*

As might be expected, however, Day already had yet another alternative. According to a report in *Nature* (Anon., 1876 : 334), an artist called Wood was said to have offered to produce the 30 extra plates for the *Fishes of India*, bringing the total from 160 to 190 plates or about 1140 figures, 'in exchange for the type collection, numbering about 1,200 species. . .' Since no artist would seriously consider cluttering his house with 1200 bottles of alcoholic fish specimens, it was clear that sale of the specimens at some future date was anticipated.

In fact, this benevolent artist was not a Mr Wood – presumably a misreading of Day's handwriting – but none other than Day's artist George Ford. To Peters, Day explained that 'Ford has taken my collection for extra plates so now I shall

* Some £1200, or almost half the budget for the Zoology Department, was allocated to the purchase of specimens (but for books, only £25 !) in 1875 and at least the two succeeding years (BMNH.MS.Doc., 1 : 61, 99, 202).

have at least 190 plates' (28 November 1875, ZMB.MS.). In a note in one of his bound series of reprints (Eg. 11), Day spoke of the sequel to this affair.

> Mr Ford in order to increase the usefulness of this work proposed augmenting the figures by giving 30 additional plates for the type collection. Dr Anderson the head of the Indian Museum at Calcutta secured it for that institution by paying for the same. But Mr Ford took the risk without ascertaining if there was a market.

Shortly after his letters to Peters, Day was able to make a proposition to John Anderson (see p. 133 below), and in *Nature* it was stated that the Calcutta museum 'hearing of this arrangement [between Day and the artist] proposed to the Trustees [that they] secure it on these terms. . .'. It was left to the reader (and one sees Day's hand behind this) to decide whether this collection would not have been better placed in the British Museum (Anon., 1876 : 334).

Having successfully raised money for the extra plates, Day could now conclude the work, but further difficulties arose. In August 1875, shortly after beginning the plates, Ford's health declined and the work fell seriously behind schedule (Day to Peters, 22 August 1875, ZMB.MS.). Ford wrote to Day in November 1875 explaining the position and regretting that he could not possibly complete the 160 plates before the end of 1876 (8 January 1876, GI.DARC.Proc.). Reasonably enough Day wrote to the Secretary to the Government of India for an extension to his period of special duty in England on the grounds that his presence was required to see the plates to completion ; further, if he left now 'Ford will be unable to continue the plates, and his four artists discharged, when they will doubtless be taken by others [by this he must surely have meant Günther]' (loc. cit.).

As in 1864, Day had again got himself comfortably settled in Cheltenham and was no doubt reluctant to return to India at a time when his work was in full swing. He was entitled to retire in May 1876 on a pension of £220 per year, but an extension of his special duty would require a further five and a half months in India to qualify for more furlough ; could he not set this off against the interruption in his sick leave of 1870 when he had been recalled earlier than expected? (8 January 1876, GI.DARC.Proc.). His plea was granted the following month and the Governor-General allowed an extension for six months from 1 May (18 February 1876, loc. cit.), Day eventually retiring in November 1876.

The further progress of the book can be seen from the dates of publication given in a footnote in the Preface (see also Prashad, 1929).* Part 2 appeared in August 1876, part 3 exactly a year later, and part 4 is dated 1 December 1878. Ford's health continued to decline and he died in July 1876, having drawn almost all of

* The dating of Day's *Fishes of India*, from the preface and from Prashad (1929) and Menon & Rao (1974), is as follows:

Part I	pp. 1–168	pls 1–40	Aug. 1875
Part II	pp. 169–368	pls 41–78	Aug. 1876
Part III	pp. 369–552	pls 79–133	Aug. 1877
Part IV	pp. i–xx (i.e. Preface, Introduction, Index), pp. 553–778	pls 134–195	1 Dec. 1878
Suppl.	pp. 779–816	7 text-figs	Oct. 1888

the plates for the first two parts of the book and a few of those for the third. Day engaged other artists and, with more time at his disposal now that the deadline for part 1 had been met, drew 42 of the plates himself and 6 in collaboration with Suzini. The other plates were drawn by Achilles (32)* and a few by R. Mintern. Day collaborated with Suzini with the lithography of two plates, but the remainder were undertaken by Achilles, Suzini, G. L. Greisbach and R. Mintern. Eleven of the plates were printed by the firm of Martin & Hood, but all the others were done by Mintern Brothers of Hard Street, Bloomsbury (the firm to which Ford had been attached during his latter years).

When Day took over the plates for the second two parts of the book, he used his interleaved and annotated copy of the report on Indian marine fishes (Eg. 11) to keep a record of when the plates went to press. The dates and numbers run from 14 January 1877 to a date after 11 September 1878, and from Plate 79 to Plate 183. Towards the end of this interleaved book Day entered in the contents of each plate, made many alterations to plate numbers to accommodate the extra 30 plates, and gave the name of the artist. Even more important, however, he gave details of the figured specimens. In many cases dorsal and anal finray counts are given, as well as horizontal and oblique scale rows and (for clupeoids) scute numbers. Large fishes are marked 'to be $5\frac{1}{2}$ inches' while small fishes were to be 'full size'. In a few instances a name has been deleted and another substituted.

In a letter to Peters, Day said that he did not intend producing a coloured edition 'but as soon as the plain one is out I propose having 20 copies coloured and allowing Quaritch to dispose of a few, but this cannot be done for 3 or 4 years' (28 November 1875, ZMB.MS.). This might explain a cryptic note on the flysheet of the interleaved reprint (Eg. 11) cited above, in which Day wrote '600 blacks 50 grays', the less heavily printed (grey) plates perhaps being those intended for colouring. However, we have not found any record of such coloured copies. With over a thousand figures to colour, the work and expense would have been enormous and Day probably never had time to undertake or supervise it. A single bound volume containing only the plates has been seen by one of us (P. J. P. W.). It is titled *One hundred and ninety-eight plates to illustrate Francis Day's work on the Fishes of India 1889*, and on the verso is 'London, G. Norman and Son, Printers, Floral Street, Covent Garden, W.C.' Inside was a photograph of a wedding party of about the 1890s, from a Rangoon studio, but none of the names pencilled on the back related to the known friends of Day (we are indebted to Mr Roger Lubbock for bringing this volume to our attention). Possibly these were plates set aside by Day for a coloured edition and bound up by the printer when the idea was abandoned. However, the plates are not noticeably lighter than those in normal copies.

In the first volume of his annotated and interleaved copy of the *Fishes of India* (Eg. 12), Day dated the title page 'August 25th 1875' and this may well be the actual publication date. In a letter to Bleeker dated 8 August 1875 he said that

* The only reference that we have to Achilles is a short letter in one of Day's bound series of reprints (Q 481). Writing from 37 Alexandra Road, Sandy Lane, Kew, on 19 August (or July) 1877, he signs himself Chs Achilles and asks Day to bring more specimens up to London for the next plate. Apart from a tendency to ruin specimens (see p. 79), he seems to have been a good draughtsman.

he hoped to send 'next week Pt 1 of my Fishes of India' (RMNH.MS.); a note at the top of the letter shows that Bleeker replied on 13 September and in Day's next letter to Bleeker (17 September) the latter is thanked for his remarks on the book. He had earlier written to Peters saying, 'I hope now to finish the printing of the first ¼ of my book by the end of July . . .' (26 June 1875, ZMB.MS.) and on 22 August he wrote to say that he had ordered the book to be sent 'which I hope you have received before now' (ZMB.MS.). Referring to Part 2, Day wrote to Bleeker on 3 August 1876 saying, 'I have done myself the pleasure of sending the second part of my Fishes of India for your acceptance. Whilst doing so permit me again to thank you for the great assistance you have given me.' (RMNH.MS.) He also wrote on the same day in a similar vein to Peters (ZMB.MS.). Unfortunately, Part 3 cannot be dated from these letters, although Day sent pages 369–376 and the plates (except Plate 83, which was not yet printed) to Bleeker on 12 January 1877; these however, would have been proofs since Day did not then anticipate publication until July (RMNH.MS.). For the first part of the book Day had sent drawings and descriptions of Mugilidae and also the plates for the Gobiidae to Bleeker asking him to check the names 'prior to my having the names put on them' (8 August and 17 September 1875, RMNH.MS.) and Bleeker probably checked other difficult groups subsequently.

On the flysheet of the first interleaved and annotated volume Day wrote 'Free list' and noted ten copies set aside for 'Mr Hume, Thomas, Peters, Milne Edwards, General Strachey, Dr Bleeker, Sir B Ellis, Mr Neill, Sir W Elliott, Self'; beside this is another list, headed 'Plates', giving the names 'Watson, Waring, Pearse, [Abercrombie ?], Le Blanc, Le Vaillant, Sauvage, Balfour, Keats, Bidie, Dobson'. Many of these had given him help with the book in one way or another; in addition, Edward Waring was both a medical colleague and married to Day's half-sister Caroline, while A. Le Blanc was probably a cousin on his mother's side and was later Honorary Treasurer of the Cheltenham Natural Science Society at a time when Day was President.

Myers (1971), in a discussion of regional monographs on extra-European fishes, chose as the great era of this form of ichthyology the half-century 1820–70, arguing that the final volume of Günther's *Catalogue* in 1870 ushered in the early modern period of taxonomic ichthyology. However, Day's *Fishes of India* (1875–78) was surely a regional monograph *par excellence* and in its concept and execution should be placed in the period that produced Poey's works on Cuban fishes, Klunzinger's Red Sea study, Playfair and Günther's book on Zanzibar fishes and Bleeker's *Atlas*. As Myers points out, all these works suffer from the same defect – a failure to comprehend the true richness of their particular ichthyofaunas. Nonetheless, Day's *Fishes of India* is a monumental work. Whatever quibbles Günther may have had with Day's taxonomy, the *Fishes of India* is more than just a catalogue with descriptions and figures. Unlike Günther's *Catalogue*, Boulenger's *Catalogue* of African freshwater fishes and several others of this period, it was written by a man with a very extensive knowledge of the biology of the fishes and of the role that they played in native fisheries. Day, in fact, was exceptional in the way that he combined field studies with museum work and covered such a vast

geographical as well as ichthyological territory. The book has never been superseded by anything of such scope, and although the nomenclature and synonymies have frequently been modified by more recent work, it is still used and valued for its descriptions, its figures and its biological data.

Final years

Since the emphasis in the present study is on Day's Indian career and collections, his later work on European fishes will be treated more briefly, except where this has relevance to the quarrel with Günther and thus to the disposal of Day's collections.

With the publication of the final part of his *Fishes of India* at the end of 1878, Day became increasingly involved with British fishes and by November of the following year was predicting to Peters the appearance in December of the first part of his *Fishes of Great Britain and Ireland* (8 November 1880, ZMB.MS.). However, he had another preoccupation, for he was 'tired of Cheltenham and a country residence, being so far from Museums &c.' (Day to Peters, 10 June 1880, ZMB.MS.) and was trying in every way possible to succeed his old friend Frank Buckland as Inspector of Fisheries. At that time two Inspectorships existed, one held by Spencer Walpole and the other by Buckland. In 1878 the two men had been commissioned to report on the sea fisheries of England and Wales, but by September 1879, when the Report was presented, Buckland was already a sick man (Burgess, 1967 : 172). In April the following year Day wrote to Peters of Buckland's illness, from which there now seemed no chance for recovery, and he confided : 'I should like his appointment & had the conservatives remained in office should probably have obtained it – now all is change and I have to watch everyone so closely that I cannot get away [to Berlin as promised]' (11 April 1880, ZMB.MS.). In June Day made the Berlin visit, but on his return he found that, as he had feared, 'matters were not looking promising as to my chance of succeeding Buckland' and worse 'we have traced the cause, my old friend Günther is trying all he possibly can to get in a protégé of his own, whose name I have not yet obtained' (10 June 1880, ZMB.MS.). The solution, thought Day, would be a recommendation from Peters.

> My friends tell me that it would be a matter of extreme importance could I obtain from you a testimonial as to your belief in my capacity to undertake the administration of fisheries should such an appointment be vacant – That your opinion as both a scientific ichthyologist and a practical worker in the field would probably outweigh Günther.
>
> (10 June 1880, ZMB.MS.)

Day wrote this with 'great hesitation', fearing his request might not meet with Peters' approval, but the latter complied (12 June 1880, rough draft, mostly in German, ZMB.MS.) and Day wrote in gratitude for the testimonial 'which I shall never part with. . . . Even should I be so unfortunate as not to obtain the vacancy when it occurs such letters as yours will go far to reconcile me to the loss and to spur me on to try to obtain more knowledge than I now possess on the subject

of Fish and Fisheries.' (17 June 1880, ZMB.MS.) By November the vacancy still had not been advertised. Buckland, wrote Day, seems a little better 'but it cannot last – I personally wish him well in every way but on a vacancy occurring shall at once put in an application for it, and though a very strong party exists to put in a younger man I believe (*unless politics* interferes) that my name stands first on the list' (Day to Peters, 8 November 1880, ZMB.MS.).

Buckland died on 19 December and by late January his successor was appointed. In fact, age played no part, nor perhaps politics, and the choice seems virtually to have been made only very shortly after Buckland's death (Burgess, 1967 : 213). To Peters, Day wrote simply : 'Huxley is put in – comment is unnecessary', adding rather sadly 'At present I do not quite see what is best to be done all my plans are upset . . . it is unlikely that I can do so much as I had hoped to have accomplished in European ichthyology.' (19 January 1881, ZMB.MS.)

There is no doubt that Day would have brought to the Inspectorship qualities of which Buckland would have approved and which Huxley lacked. In 1885 a post of Inspector was again vacant, but again Day was disappointed. This time it was given to Arthur Berrington, an appointment which *The Field* thought would be 'received with a feeling of passing surprise by the many who had taken it for granted that Mr Francis Day, or some of the fourteen or fifteen candidates who have been talked about, would have been selected' (31 October 1885, cutting in Q 653, vol. 1).

Day's fears for his contribution to British ichthyology were unwarranted, however. Although, with his great energy, Day might well have succeeded in combining fishery work with the writing of his book on British fishes, the latter is even today a worthy contribution from a man who had already devoted more than half his career to Indian fishes. 'As a text book for the naturalist interested in British fishes it is still without peer . . .' commented a recent ichthyologist (Wheeler, 1966).

Day's interest in Indian fishes continued, however, and the numerous annotations in his reprints show that he kept abreast of the literature. His interleaved copy of the *Fishes of India*, bound in four volumes (Eg. 12), acted as a compendium of his later additions and he marked the flysheet 'This copy is annotated for a second edition – F Day'. In December 1887 he told Eduard von Martens at the Berlin Museum that 'I am engaged on a revision of my "Fishes of India" . . .' (20 December 1887, ZMB.MS.). He made a number of visits to the British Museum, of which one on 19 January 1888 is recorded (Boulenger to Day, 21 January 1888, and annotation on p. 22 of first interleaved volume, Eg. 12). By October, his *Supplement* to the *Fishes of India* was published, being chiefly additions and correction to the synonymies, but including also descriptions of fifteen new species. By this time he had seen the descriptions and drawings of Burmese fishes made by Colonel Tickell (see p. 112) and seven of his new species and one new genus were based on Tickell's unpublished work. The *Supplement* was in part the result of a request that Day condense his *Fishes of India* to form the two fish volumes in the series *The fauna of British India including Ceylon and Burma* (Day, 1889). Day may well have hoped to produce a second edition of the *Fishes of India*, but time

was against him. He lived long enough to correct half the proofs of the first volume of the *Fauna*, which was published the month that he died, the second volume appearing later that year (Introduction to volume 1, Preface to volume 2).

Yet another link with India was Day's work as Commissioner for the Indian Department at the International Fisheries Exhibition in London in 1883 (see p. 81). For his contributions Day gained three gold medals and £100 prize money for his essay on British commercial sea fishes (Day, 1884c ; also two other essays – Day, 1884d, e). He also earned glowing praise from the Chairman of the Executive Committee in a letter to the Secretary of State for India and two years later he was honoured with the decoration Companion of the Indian Empire (17 July 1889, CE.).

Day had already participated in four previous fishery exhibitions (Paris, 1875 ; Berlin, 1880, bronze medal ; Norwich, 1881, silver medal ; and Edinburgh, 1882, gold and silver medals) and his interest in European as well as Indian fisheries is shown by articles in *Land and Water*, essays for exhibitions and so on (some cuttings and proofs in Cheltenham MSS. ; see also bibliography in Dean, 1916). He also made a particular study of salmonid fishes, using the stables at the back of his house for rearing experiments (17 July 1889, CE.), and in 1887 published the *British and Irish Salmonidae* (which contained a great deal of his own original work, much of it being carried out at the fish farm of his friend Sir James Maitland at Howieton, near Stirling). In 1872 he was awarded a silver medal by the Société d'Acclimatation of France in recognition of his efforts to plant trout in India. He was also honoured with the Cross of the Crown of Italy and was elected Honorary Member of the Deutscher Fischerei-Verein and the American Fisheries Society.

Reconciled to a country life, Day played an active role in scientific affairs in Cheltenham. He became Vice-President of the Cotteswold Naturalists Field Club, President of the Cheltenham Natural Science Society and President (as well as active founder) of the School of Science in Cheltenham. He was also a member of the Severn Fisheries Board and a member of the Council of the Gloucestershire Archaeological Society. In the year before his death he received an honorary Ll.D. from the University of Edinburgh (17 July 1889, CE.).

Thus, through singleness of purpose, extraordinary hard work and a persistence that as often brought opposition as it did respect, Day finally won the reassurance – so needed in his earlier years – that his contribution to ichthyology was appreciated. There was, however, one man who did not care to endorse it – Albert Günther at the British Museum.

DISPUTATIONS WITH GÜNTHER

The theme of our study has been the distribution by Day of specimens from his enormous collection of Indian fishes. It has already been shown that Day's relationship with Albert Günther probably played some part in the British Museum's decision not to buy Day's best specimens when they were offered in 1875 (see p. 53). Some episodes in the quarrel between the two men have been described,

but the full force of the battle, and thus the justification for the eventual distribution of Day's collections, merits further treatment.

The battle was waged on two fronts. The first, until Günther virtually withdrew in 1871, was conducted in the pages of scientific journals, each party evidently believing his own contribution to be well within the bounds of polite scientific controversy (but rarely agreeing that the other had kept to those limits). The second was the personal confrontation over facilities at the British Museum, which can now be reconstructed from letters, notes and memoranda ; the impression given is that this was a battle on paper rather than a series of violent face-to-face quarrels.

As a comparative newcomer to ichthyology, and having entered the field as an amateur, Day was highly vulnerable to criticism in the early years before his reputation was established. Instead of the kindly encouragement that Günther could well have afforded to give, Day received in the years 1866–71 a series of often harsh criticisms for all to read in the *Zoological Record** and the *Proceedings* of the Zoological Society. If help and advice were given, and they were sought initially (Day to Günther, 22 January 1865, BMNH.MS.Z.), the goodwill was soon eroded by Günther's reviews. In addition, Day most probably resented the air of authority that surrounded Günther, to the extent that Day's friend Neill could urge Day to bow before it. Again, Day had all the confidence of one who knew his fish in the field, who had handled them, drawn them and knew their native names ; for Günther they must be merely discoloured specimens in jars, suitable for a kind of study that bore no relation to Day's open-air life in India. Günther, on the other hand, evidently regarded Day as a beginner, anxious to run before he could walk, and was perhaps resentful that Day had not consulted him more fully before launching his first and fairly ambitious ichthyological work. What is apparent in this quarrel is that there was already such strong conflict between the personalities of these two men that friends felt it necessary to plead for restraint, sometimes on Day's part, but also on Günther's.

The naming of a new species after a distinguished colleague or after the collector of the specimens would normally have been part of the relationship between two such ichthyologists as Günther and Day. In fact Day gave the name *guentheri* to a species of *Mastacembelus* in the first part of his paper on Cochin fishes (Day, 1865a : 37). Günther could have given Day's name to the new species of *Catopra* (see above, p. 28) but he did not, even though Day had collected the specimens and had already sent some useful additions to the Museum. Two years later Day proposed *Nemacheilus guentheri*, of which he said (perhaps with an inward smile) : 'This very pretty little Loach I have named after Dr. A. Günther.' (Day, 1867a : 286.) His final token of esteem was to supply the name *guentheri* for a species of *Barbus*, having heard from Günther that the name he originally proposed had already been used in that genus (Day, 1868d : 583). Günther promptly sank the name in synonymy in the next issue of the *Zoological Record*. Thereafter, Day

* Founded by Gunther in 1864 as the *Record of zoological literature*, it was taken over in 1870 by the Zoological Society of London and renamed the *Zoological Record*.

probably felt that he had done his duty ; Günther presumably never recognized such a duty.*

What appears to have been the beginning of the quarrel was Günther's naming of a new species (*Catopra malabarica*) on Day's own Malabar specimens. There is a strong feeling, but no proof, that Günther must have had some inkling that Day was engaged in describing Malabar fishes at that time. Although he received only two small collections from Day in 1864 (5 fishes), he should at least have investigated whether Day had any pretensions to ichthyology. An entry in Günther's official diary for 1862–65 shows that on 22 July 1864 he was 'Examining a collection of Indian fish made by Dr. Day . . .' (BMNH.MS.G. 3), clearly that containing the new *Catopra*. There can be no certainty that Day had previously met Günther (during his leave of 1857–58) and in any case Günther was at that time cataloguing reptiles while Day was known principally for his interest in birds (see p. 22). It is difficult to believe, however, that Day did not attempt to meet Günther before the end of 1864 ; five years had passed since the first volume of the great *Catalogue* had appeared (1859) and Day would surely have made a point of meeting its author at the Zoological Society meetings, if not at the Museum.

Whatever the circumstances, however, the die was cast. The hapless *Catopra malabarica* now became the focus of a sharp exchange on the question of its correct generic allocation (see above, pp. 29–30). Following Day's first notion, that the fish was a new species of *Badis* (Day, 1865a : 30), and perhaps preceding his decision in the *Fishes of Malabar* to accept Bleeker's opinion that it was either a *Nandus* or closely allied to that genus, Day wrote to Thomas Jerdon in India enclosing a copy of the *Fishes of Cochin* with a manuscript footnote suggesting that *Catopra* was in fact Jerdon's genus *Pristolepis* (Jerdon, 1866 : 153). Jerdon evidently had no high regard for Günther. He accordingly wrote a letter addressed to the Editors of the *Annals & Magazine of Natural History* in which (without mentioning Day) he asserted that Günther's *Catopra* was his own *Pristolepis* and Günther's *malabaricus* his species *marginatus*, as described in his paper on the freshwater fishes of southern India (Jerdon, 1848). Perhaps egged on by Day, he added :

> It is very possible that Dr Günther may not have seen my paper . . . but it is quite as likely that he has seen it and ignored it ; and I therefore beg to call his attention to it, as well as that of other naturalists who may not be disposed to treat so slightingly the labours of fellow-workers in natural science, writing under every disadvantage in a foreign land.
>
> (Jerdon, 1865 : 298)

* Day named 96 of his species after some 42 friends, colleagues, illustrious predecessors, and officials and others who helped him in his work. The most frequently honoured was Pieter Bleeker (9 species), followed by Brisbane Neill (8), Thomas Jerdon (7) and Ferdinand Stoliczka (7); Hamilton-Buchanan, Edward Blyth, Sir Walter Elliot and a Mr Haly (curator of the Colombo Museum) merited 4 species each, while Günther, William Sykes and Henry Thomas merited 3; among the remainder were Wilhelm Peters, Sir William Denison, John Anderson of the Indian Museum (2 each), Franz Steindachner of Vienna and George Bidie, fellow surgeon and later curator of the Madras Museum (1 each). He evidently had a particular regard and affection for Bleeker, Neill, Jerdon and Stoliczka, but it is surprising that more species were not named after Peters, who seems to have rendered him as much help as did Bleeker (see below, p. 138).

Jerdon went on to criticize as 'perfectly mythical' Günther's claim, based on Brian Hodgson's collections, that *Therapon* and certain other marine fishes found their way into the freshwaters of Nepal (Günther, 1861).

Günther replied tartly that *Catopra* was not his genus but Bleeker's; that of course he knew Jerdon's paper, but the description of *Pristolepis* bore so much the stamp of being written 'under every disadvantage in a foreign land' that it was unrecognizable either to Bleeker or to himself; and that some species of *Therapon* were actually exclusively freshwater (Günther, 1866 : 298). Jerdon was not to be put off. While acknowledging that *Therapon* and others came into freshwater, he insisted that they never penetrated as far as Nepal; Hodgson's specimen must have come from Calcutta (Jerdon, 1866).* He then returned to *Pristolepis* and said that he had heard from Day that it was his intention to treat *Catopra* as a junior synonym. In Jerdon's opinion, moreover, 'the rules of nomenclature' certainly did not authorize 'the assumption by any one individual, however learned, to reject a genus or species because he states that he himself finds it impossible to recognize it . . .' (Jerdon, 1866).

Reporting on this exchange in the *Zoological Record* for 1866 (p. 142), Günther loftily declared the case 'singularly instructive of the way in which the history of a simple form of fish, the affinities of which cannot leave one in doubt for a moment, may be confused from insufficient original description, and from want of experience generally'. His strictures on Day and Bleeker, quoted earlier (p. 30), were no less caustic.

In this summary manner Günther disposed of Jerdon and Bleeker, but for Day was reserved a further twist of the knife. Reviewing in the same issue of the *Zoological Record* his own *Fishes of Zanzibar*, Günther smugly claimed that,

> Science is indebted for this work to the Government of Bombay, who most liberally assisted its production by taking 100 copies.

Günther, like any other reader of the *Fishes of Malabar*, knew quite well that the Bombay Government had also patronized Day's book, which after all dealt with fishes rather nearer to home; but the extent of that patronage, so important to Day, had been precisely four copies.

With *Catopra* apparently justified (but with no new grounds offered), Günther's next attack in the *Zoological Record* was on Day's paper on the Nilgiri fishes (Day, 1867a), both by uncharitable reference to the trout planting failure (see above, p. 35) and by commenting that certain of Day's new species were evidently identical with known and even common species; he made similar remarks about some of the new species or their generic allocations in Day's paper on Madras fishes (Day,

* Even fifteen years later, in his *Introduction to the study of fishes*, Günther (1880) still held that *Therapon* occurred in Nepal. Commenting on this, Day echoed Theodore Gill in saying that Günther, having once asserted something, 'sticks to it' (criticisms of Günther's book, Q 483). Günther's mistake was that of the museum worker with no experience of the country whose fauna he was describing, a position much criticized by the new generation of Indian field-workers (see Gunther, 1975 : 163). Of another of these 'Nepalese' fishes collected by Hodgson, Day found it 'almost unnecessary to observe [that it] could not have been captured in such a locality' and he suspected that all Hodgson's Nepal fishes must in fact have come from the Hooghly (*Fishes of India* : 81).

1867b). Day was not alone in finding his new species synonymized in the *Zoological Record*, but it was obviously galling, the more so since Günther's frequent use merely of the symbol = implied that the matter was above any dispute and thus required no form of justification. In the 1868 edition of the *Zoological Record*, however, Günther paused to examine Day's *Priacanthichthys madraspatensis*, a new genus and species that Day had rather rashly described on specimens only $1\frac{1}{2}$ inches (38 mm) long (Day, 1868c : 193). In this case Günther was fair, pointing out that Day was perhaps unaware that many small acanthopterygians have a serrated spine on the preoperculum (one of Day's diagnostic features), which disappears with age.* On Day's paper on fishes collected at Kurnool (Day, 1868d), Günther had no hesitation in relegating *Barbus guentheri* to the synonymy of Sykes' *B. kolus* and he also questioned Day's views on two of Jerdon's cyprinid species : if Day was right, then 'no reliance whatever can be placed on the generic distinctions used by Mr. Jerdon', although in fact Day's determination 'was not in accordance with the characters given in Mr. Jerdon's descriptions'.

In the *Fishes of Zanzibar* (March 1867, *fide* Gunther, 1971), Günther criticized Day for ignoring, in his *Fishes of Malabar*, an earlier paper by Blyth dealing with *Serranus lanceolatus*, and for confusing it with *S. horridus*. Day found an opportunity to reply when he described the fishes in the Calcutta Museum, including Blyth's specimens (Day, 1869b). He admitted overlooking Blyth's paper, but he noted that Günther himself had not referred in his *Catalogue* to some of the synonymies proposed by Blyth. 'I only mention these instances to show how the most accurate observers may overlook casual remarks', wrote Day (1869b). Day then reassessed the problem of *S. lanceolatus*, showing that Blyth's specimens were the same as the adult figured under that name in the *Fishes of Malabar* (pl. 1, fig. 1) and that, in the juveniles at least, *S. lanceolatus* was distinctive in lacking pyloric caeca ; he ended with the question of whether the type specimens of *S. horridus* also lack pyloric caeca, for this would justify his placing of *horridus* in the synonymy of *lanceolatus*. In the *Zoological Record* for 1869 Günther pounced :

> The Recorder has dissected a *S. lanceolatus* in the presence of Mr Day, and shown him that numerous pyloric appendages are present.

Day was forced to retreat and in the *Fishes of India* (p. 18) wrote rather lamely 'Caecal-pylori – very short, consequently in the young appear almost like a gland'. Of interest is the evidence that Günther and Day had examined the specimen together, for this could only have occurred during Day's leave of 1864–66, either at about the time of the Zoological Society meetings of January and March 1865 or later that year during preparation of the *Fishes of Malabar*.

Günther's criticisms in the 1868 *Zoological Record* were answered in part by Day in his paper on Orissa fishes (Day, 1869a), for the most part politely and without rancour. Day also answered the earlier charge made by Günther in the *Catalogue* (volume 7, p. 365) that Day had 'erroneously represented' the pectoral fin in *Platacanthus agrensis* (*Fishes of Cochin*, repeated in *Fishes of Malabar* : 204, pl. 14) by

* Forced to accept this, Day eventually recognized the fish as a juvenile of *Serranus latifasciatus*, but without reference to Günther's prompting (Day, 1888 : 781).

omitting part of the fin membrane. *'The drawing was a correct one* of the single specimen' insisted Day ; the membrane was absent 'and I merely copied correctly from what I saw before me, without adding to or subtracting from it' (Day, 1869a : 384).*

Until now Günther's criticisms had usually been brief. In the *Zoological Record* for 1869 he still continued to equate (without justification) many of Day's new species with already described forms, but here and there he inserted a remark, often to cast doubt on Day's abilities as a taxonomist.

> . . . but a fish described as having large scales and minute barbels is not likely to be the *B. beavani.*
>
> (*Zoological Record*, 1869 : 136)

> Mr. Day is evidently again too hasty in this identification. First, Hamilton-Buchanan's fish has more than nine branched dorsal rays (a character the value of which Mr. Day will by-and-by learn to appreciate). . . . Secondly, without attempting to say what Mr. Day's fish may be, it cannot be the *Crossocheilus rostratus*, as the latter has a pair of upper barbels only, but no maxillary barbels (provided Mr. Day knows how to distinguish between these two kinds of barbels).
>
> (*Zoological Record* : 135)

> The position of the barbels in the figure given by Sykes indicates a *Eutropius*, and not a *Pseudeutropius*, a circumstance left unexplained by Mr. Day.
>
> (*Zoological Record* : 135)

It was some years before Day got his own back for these scathing remarks in the *Record*, but he obviously enjoyed penning the following quite gratuitous footnote to *Pseudeutropius*.

> Dr. Günther (Geolog. Mag. Oct. 1876) determines a fossil fish from Sumatra, *deficient of a head*, to be *Pseudeutropius*. He does not note the position of the barbels !
>
> (*Fishes of India* : 471)

Pseudeutropius, intimately bound to the problem of Sykes' types (see below) and provoking the same passions as had *Catopra* a few years earlier, merited a second footnote of justification.

> Dr. Günther as a Recorder of facts, animadverted on my considering *his well-determined* ! *P. Mitchelli*, a synonym of *P. Sykesii*, Jerdon, observing 'if he cannot verify his assertion by the examination of the typical specimen, he has no right to exchange the name of a well-determined species for a doubtful one' (Zool. Record. 1865, p. 199). Jerdon had described the species fifteen years before Dr. Günther and sufficiently well for my recognizing it at the locality where he found it.
>
> (*Fishes of India* : 473)

* In a spare reprint of his Cochin paper (bound volume, Eg. 14) Day carefully added the missing membrane in ink, having presumably found another specimen.

The volumes of the *Zoological Record*, although intended as a record of current literature and not a report on it, allowed 'the recorder [to] add any critical remarks which he thinks necessary for the object in view' (Vol. 1 ; Preface : vi). The object, as Gunther (1975 : 292) observes, seems to have been not unconnected with an early training for the church, the Recorder 'preaching scientific taxonomy' from his newly created pulpit. However, in subsequent issues of the *Record* Günther abandoned his caustic comments on Day's work and even the curt synonymies disappear. His attacks had so frequently been aimed at Day that critics may have enquired if personal motives were involved. Others were not so fortunate and two years later Alfred Newton* felt that he should take Günther to task over some remarks in the reptile section of the *Record*.

> Yesterday I was looking over your *Reptilia*. . . . The only one who does not get a flick from you is Beddome who does not seem to have written anything at all and therefore by rights his name ought not to appear! But seriously speaking, I think you have overdone it in the case of Theobald and Blanford. Granted that they are ten times as bad as you make them out, they will believe, and get others to believe, which is a much more unfortunate matter, that the recorder is not fair as regards Indian herpetology. You bite one as if you were a viperian snake and roll up the other to squash as if you were a boa constrictor.
>
> (31 July 1871, BMNH.MS.G. **16**)

It would be interesting to know the role played by Arthur O'Shaughnessy in all this since he is said to have helped Günther in compiling the *Record* (see below, p. 76) and in 1873–79 he appears as Recorder (no doubt with Günther's guidance). Günther's command of English was certainly sufficient for normal purposes, although in 1859 (admittedly only two years after his arrival) Owen had hinted to him that he should work to improve it if he were to give lectures (Gunther, 1975 : 273). Even in 1862, Günther was still a little troubled by written English and he asked H. T. Stainton, Secretary to the Ray Society, if his writings for the *Reptiles of British India* could be 'carefully looked through before they go to press . . . [by] men who have for the last five years been accustomed to my style. . . . This has always been done by the readers of Taylor and Francis to my full satisfaction' (cited in Gunther, 1975 : 300). One wonders whether O'Shaughnessy the poet did not sometimes remodel Günther's phrases (as he claimed to have done for some of Günther's papers – see p. 81), thus providing the often exquisite sting that characterizes Günther's attacks on Day.

Although Day was in England and visited the British Museum in September 1870 (see p. 45), it was not until mid-1871 that he saw the 1869 volume of the *Zoological Record*, the most critical of his work to appear. He immediately wrote a reply entitled 'Remarks on Indian fishes', which he sent to the *Proceedings* of the Zoological Society (Day, 1871c). In this paper he acknowledged that at times he

* Alfred Newton (1829–1907), Professor of Comparative Anatomy at Cambridge. Newton was closely associated with the *Record* from the beginning, both as author of the ornithological section and from 1871 as editor. See biography by Wollaston (1921) and obituaries (especially *Proc. Roy. Soc.* B, **80** : xlv–xlix).

might have been in error, but he set out to 'show my correctness when it has been erroneously called into question'. In the case of *Serranus lanceolatus* he found it 'unfortunate that the drift of my observations . . . have been so misunderstood by the Recorder . . .', but the question of whether the pyloric caeca were present or not was rather glossed over. On *Pseudeutropius*, however, Day justified himself on the basis of a Sykes type of *Hypophthalmus taakree* which Günther had 'courteously permitted' him to examine at the British Museum in 1870; it was truly that species but its label had been transposed from a specimen of *H. goongwaree*. Finally, Day dealt with the problem of barbels and dorsal finrays in *Crossocheilus rostratus*, about which Günther had been so scathing. 'Leaving aside personalities', wrote Day, 'as irrelevant to scientific discussion, wherein facts are the subject in question . . . I think some error has found entrance [into the Recorder's statements].' At this point, and perhaps over-anxious to prove himself right, Day made a mistake in his quotation from Hamilton-Buchanan's original description of *Cyprinus bata*. It clinched his argument that the fish had only nine dorsal finrays. When Day realized his error he wrote a hasty note to Brisbane Neill, dated apparently 2 September 1871, asking the latter to make a correction to his paper (inferred from James Harting to Günther, 28 December 1871, BMNH.MS.G. **15**). As a result, a considerable row developed since Day's instructions did not reach Philip Sclater, the editor of the *Proceedings*, until late in December, by which time Day's paper had been read before the Society (7 November) and Günther had already delivered a stinging reply (5 December). Neill explained to Sclater that the fault was his; he had been abroad at the time (Neill to Sclater, 22 December 1871, BMNH.MS.G. **15**). Günther objected strongly to any changes being made, but the Publication Committee of the Society agreed Day's alterations and allowed Günther 'liberty to alter his criticism upon that paper accordingly' (Harting to Günther, 31 December 1871, BMNH.MS.G. **15**).

Günther's counter-attack was more brusque, incisive and final than Day's 'Remarks' (Günther, 1871). On the so-called types of Sykes' *Hypophthalmus taakree* Günther found it 'almost incredible that this elaborate statement of Mr. Day proceeds entirely from his own imagination and is wholly fallacious'. The 'transposition of labels [was] merely a convenient supposition of Mr. Day (used by him not for the first time), without even a shadow of probability in this case'. He accepted as a compliment Day's reference to his 'courteous' permission in being able to examine the specimen, but he had to observe that none of the Museum's employees 'have the power of permitting or denying access to the collections'. For the finray count of Hamilton-Buchanan's *Cyprinus* he was able to present an even better case now that Day's argument had been partially destroyed by having to give the correct quotation from the original description; to clinch the matter Günther reproduced a tracing from Hamilton-Buchanan's drawing and, lest his readers could not count, he numbered the branched finrays one to ten.*

* A loose leaf inserted at the relevant page in Day's own copy of Hamilton-Buchanan's *Fishes of the Ganges* (Q 498) shows the struggle that Day had to find a loophole in Günther's argument. He strongly resented Gunther's numbering of the dorsal finrays, which he noted 'were *added*. They are not on the original drawing.'

Günther concluded that 'as long as Mr. Day introduces into his papers statements of the kind mentioned above, I feel that for the future, it will be undesirable to employ my time in taking notice of similar communications to the Society'.

Günther had sent his reply to Sclater and had asked that it be read by a referee before publication. Sclater replied that he could 'see nothing objectionable except two expressions which I should like modified' and that he could see no point in referring the paper (5 December 1871, BMNH.MS.G. **16**). Günther hastily assured Sclater that he did not think there was 'anything objectionable' in the paper ; his desire to have it referred 'was not to relieve me of anxiety as regards the propriety of some part I had written ; but to draw the attention of the referrees & through them of the Comm. of Public. to the character of previous papers of which the last finally provoked my reply'. He added that he could not move 'in so direct a manner, as I should have done, if I had not been the party concerned' (draft on reverse of Sclater to Günther, loc. cit.). It is difficult to imagine how much more direct Günther could have been, at least with a pen.

In a final paper of that year, Day (1871d : 716) took Günther to task over the swimbladder in siluroid fishes, a subject that appeared 'if one may form an opinion from the British Museum Catalogue, to have escaped Dr. Günther's attention'. In 277 pages of siluroid descriptions, Day found only four mentions of the swimbladder and he painstakingly cited them in full 'to obviate the possibility of it being supposed that I wish to create any erroneous impressions respecting Dr. Günther's valuable ichthyological writings (see Zool. Record for 1869). Nothing is further from my wish, which is to obtain *facts*, no matter who the author may be, and, if possible, to take nothing on trust from any naturalist, however excellent an observer he is, when I can examine into the matter myself'. The comment was, of course, rather unnecessary and its elaborate padding is characteristic of Day's quite unsubtle pretence that his jibes at Günther were solely in the interests of truth.

Meanwhile, he evidently did not forget (or forgive) Günther's incisive counter-attack in the *Proceedings* of the Zoological Society. He wrote a partial reply (Day, 1872 : 320 – the *Cyprinus bata* question), but in 1873 came his opportunity to justify himself more fully. In that year the Secretary of State for India authorized the return to India of the 28 volumes of Hamilton-Buchanan's writings, notes and drawings which for over sixty years had lain in the India Office Library in London (Day, 1873e ; see Gudger, 1924, and Hora, 1929, for a history of this material). Examining these and comparing Hamilton-Buchanan's descriptions with those given by Günther in the *Catalogue*, Day drew further support for his interpretation of Hamilton-Buchanan's dorsal finray counts. Günther had commented scathingly that 'it requires but slight acquaintance with Hamilton Buchanan's works to see that his rule was to count the last ray (which is *generally* split to the base) as one and not as two. Mr Day's statement to the contrary is quite incomprehensible'. Day now argued that if this were truly the case, then Günther's counts should be the same as Hamilton-Buchanan's. But, in a number of species of *Pimelodus* given in the *Catalogue*, Günther's counts were consistently lower than those of Hamilton-Buchanan, even in the case of *P. tengana*, of which Günther had no specimens and must, therefore, have '*altered the figures from 8 to* 7, and,

I am convinced, correctly so'. 'Surely', concluded Day, 'the foregoing twenty-two instances out of thirty-two consecutive species are sufficient to prove that Hamilton-Buchanan frequently counted the last ray of the dorsal fin split to its base as two, although "*but a slight acquaintance*" with his writings might lead one to consider he counted them as one' (Day, 1873e : 746). The question is certainly an important one in some groups of fishes, but Day did not fully solve it since, as he himself admitted, Hamilton-Buchanan was not consistent and occasionally reduced the number of finrays. He had, however, dispelled the slur on his own ability to count accurately.

In the same paper, Day also commented on other contentious species and he returned to the problem of Sykes' types in the British Museum, the presence of which Günther had denied but later qualified (Günther, 1872 : 877), remembering that he had actually listed two Sykes types in volume 5 of the *Catalogue* (under *Schilbe pabo*, p. 46 ; and under *Glyptosternum lonah*, p. 187). Finding the door slightly ajar, Day now pushed it wide open and, with the assurance that he was not 'uselessly drawing attention to Günther's statements', managed to leave the impression that other Sykes types might be in the British Museum (including, one would suppose, that of *Hypophthalmus taakree*).

The disputations in the literature had a wide audience and at least some readers took sides and perhaps made their views known to either Günther or Day. One who sympathized with Day was Richard Bliss, Assistant under Louis Agassiz at the Museum of Comparative Zoology in Harvard, although Agassiz's desire for the types of all Day's species may have encouraged expression of this sympathy. Bliss wrote :

> I have been much interested in your communications to the Lond. Zool. Soc. . . . I quite agree with you in your controversy with Dr Günther who I think is very unfair as he always is with anyone who differs from him. In his last communication (Proc. Zool. Soc. 1871, pt. III p. 761) he seems to have lost both candour and self-respect. But his personalities injure only himself.
>
> (Bliss to Day, 22 July 1872, LS. 2)

Unfortunately, there are no letters to or from Day or Bliss in Harvard, either in the Houghton Library or amongst the other Agassiz correspondence in the library of the Museum of Comparative Zoology (Miss C. Jakeman, *in litt.*).

Another of Günther's American critics, and by far the most outspoken, was Theodore Gill (1837–1914), whose published attacks on Günther far outdid anything that Day ever penned. Gill wrote a number of reviews of Günther's *Introduction to the study of fishes* and his *Ichthyology* article for the *Encyclopaedia Britannica*, two of which (*Forest and Stream* and *The Nation*) Day pasted into one of his bound volumes of reprints (Q 483). Gill found Günther's book 'a very, *very* poor one' and he cited Günther's confusion over the nomenclature of the blackbasses (*Micropterus*) as just one illustration of 'Günther's negligence and slovenliness', concluding that 'It is difficult to believe that one who has written so much on fishes as the author has should make so many lapses. The errors commence on the first page and flow in an almost uninterrupted, but varying, stream to the

end of the work' (Gill, 1881). At the back of this volume (Q 483) Day added five pages of his own comments on Günther's book, correcting a number of further errors not picked up by Gill. A reprint of Day's monograph on Indian cyprinids (Day, 1871b) is marked on the title page 'Professor Gill with the author's compliments' (Eg. 15); although it was not sent, it suggests that the two corresponded and Gill, like Bliss, would surely have been on Day's side.

The disputes conducted in the pages of scientific journals may at times have been relished by Day, but, as Günther showed, they could be terminated at will. Those over Day's rights as a visitor to the British Museum, however, could not be ignored. Günther, because of his position there and his hopes of promotion, was often forced to play a purely defensive role. Day, on the other hand, could attack at any level above that of Günther with little or no fear of reprisals from his own superiors. The conflict was often fierce, yet there are occasions when the evidence suggests polite, if not amicable, interludes.

The early period has been largely covered. The first quarrel, over *Catopra*, may have set the tone for subsequent personal relations between the two men, but it was not until 1870 that Day returned to England and visited the Museum again. On this occasion he spoke warmly of Günther's readiness to let him examine the collections (Day, 1871b : 97), although his motives for writing this are suspect (see p. 45 above). However, the visit to England was short and he spent little time at the Museum, being more concerned with looking at various salmon fisheries and hatcheries (17 July 1889, CE.). His next leave, of about three or four weeks in 1872, was for the purpose of getting married, but he managed at least one visit to the British Museum to check on Andaman fishes. He also made a hurried visit just before he returned to India (April 1872, appointment for 18 April, BMNH.MS.Z.).

The real battle over the Museum facilities did not come until Day's final return to England in 1874 to write the *Fishes of India*. It was at this time that Day was forced to write his weekly note requesting permission to examine certain specimens, which he listed on another page of the letter. Günther would have justified this procedure on the grounds that some warning was needed in order to have the jars brought out from the Spirit Room and carried over to the Visitors' Room ; whereas Day must have strongly resented the implication that, after nearly ten years of contact with the Museum, he was still not trusted to look over the shelves and select the jars he wanted.

Barely two months after his arrival in England in 1874, Day felt constrained to make an official complaint to Richard Owen, Superintendent of the four natural history Departments, about the difficulties he was meeting in his weekly visits to the Museum. He had already written an extremely polite letter to Günther pointing out that 'As the list of specimens [in volume 1 of Günther's *Catalogue of Fishes*] does not include any placed in the Museum later than 1859' he would feel obliged to see a list or look over all Red Sea and Indian Ocean Serranidae in case his new species was amongst them (undated, BMNH.MS.Z.). Dissatisfied with the result, Day addressed three foolscap pages of complaints to Owen (21 August 1874, BMNH.MS.G. **15**) in which he asked if only those specimens listed in Günther's *Catalogue* were available for study and if the remainder were accessible solely 'at

the option of that Gentleman'. The only list available to Day was the *Catalogue* and Day was aware that a large number of potentially interesting specimens had since accumulated. Four years earlier, in the eighth volume of the *Catalogue*, Günther had in fact tabulated the numbers of fishes received by the Museum subsequent to the publication of each volume, the grand total being no less than 6314 specimens of 958 species. Day had no means of knowing what these specimens might be. He therefore complained of 'obstacles raised which I am surprised could be permitted to exist for one moment' and although he regretted that 'scientific discussions in ichthyology have rendered Dr. Günther not so friendly as might have been perhaps desirable', he did not seek nor ask for Günther's help in his work; he only wanted either access to the collection (i.e. the Spirit Room) to see what was on the shelves, or freedom to inspect a revised catalogue showing the latest acquisitions.

Owen immediately passed the letter to Gray asking for his comments, and also those of Günther, for guidance in framing an official reply (22 August 1874, BMNH. MS.G. **15**). Günther had been ill all week (BMNH.MS.Doc. **1** : 3), but after his return to work on 29 August he started to compose a firm, well-tempered reply to Day's allegations. 'I am at a loss', he wrote, 'to see what more could have been done to satisfy Mr Day, or that I have been failing in treating him with that courtesy which is due and which I offer to every visitor to the Zoological Department.' In fact, he was 'surprised at the contents & spirit of the letter' since, when Day had paid his usual weekly visit on the 14th, the conversation had been so friendly that Day had offered to give him a list of percoids which he thought the Museum might profitably exchange with him (Günther to Owen, 9 September 1874, BMNH. MS.G. **15**).

The nub of the argument was whether, as the Preface to volume eight of the *Catalogue* seemed to imply, there was in fact a set of *Catalogue* volumes with all additional specimens entered in. Certainly, this would appear to be the most logical method of recording subsequent additions, the data being transferred from the Acquisition Registers. Surprisingly, Gray said that there was not. Answering Owen's initial request for comments on Day's complaints, Gray mentioned the latter's visit of the previous Friday, stating that Day had been content to await Günther's return. Gray went on,

> I may for your own information say that there is no revised Catalogue in the Museum containing all the specimens received between 1859 & 1870 inserted in their places, such as Mr Day asks for; nor indeed that the quotation from the preface of the last volume of the Catalogue implies that such exists.
>
> (Gray to Owen, 24 August 1874, BMNH.MS.G. **15**)

Day himself had said that 'At first leave was given for the Catalogue of 1859 being filled in, and such was done for some distance, anyhow to less than 300 pages' (Day to Owen, 21 August 1874, BMNH.MS.G. **15**). Günther, in his reply to Owen (9 September 1874, BMNH.MS.G. **15**), confirmed this, stating that the interleaved copy of Part A of volume 1 had been annotated but not Part B, so that the additional *Pristipoma* specimens sought by Day were not listed, although Day 'could

have got what he wanted by merely asking Gray for all the specimens of a particular species'. Günther admitted, however, that he possessed 'for the exclusive use of the Department, a list of these additions, accompanied by numerous M.S.-notes of a more or less tentative nature for our guidance in future examinations . . . and we have been engaged for some time in copying from this list [into] the Students' Catalogue all the specimens entered'. Günther promised to submit to Owen soon the completed Students' copy and five weeks later, on 1 October, Günther noted: 'I called today on Professor Owen, to show him our students' copy of the Catalogue of Fishes' (Günther's official diary, 1872–74, BMNH.MS.G. **3**).

Day's memorandum to Owen was evidently a hasty reaction after a visit to the Museum on 21 August. Two days earlier he had written his usual request, but since Günther had told him on the previous Friday that he would be on holiday, Day asked that 'the genera *Pristipoma, Diagramma, Gerres, Dentex* and *Synagris* [be] left so that I could complete them during your absence. If I could see a list of the species in the Museum I could easily select those I wished to examine'. (19 August 1874, BMNH.MS.Z.) Günther received this letter and wrote in the margin 'Mr Day requested to appoint a day . . . to select with me such uncatalogued specimens as he wished to examine'. Against the list he wrote: 'These specimens may be found by Tomlinson & handed over to Mr Day for examination'. It is difficult to see what went wrong, but Day evidently came away extremely angry.

The upshot was a formal letter from Owen assuring Day that 'every specimen in the Department of Zoology, for which you have a student's ticket, numbered and registered as the property of the Trustees, will be at your service for study and comparison as heretofore . . .' and 'there has never been any intention on the part of the Keeper or Asst. Keeper to withhold such specimens, Catalogues or Lists from you' (16 October 1874, BMNH.MS.G. **15**).

With this, Day had to be content. However, he had apparently heard from Wilhelm Peters in Berlin that during the latter's visit to the British Museum in September (probably 22 September – list of twelve reptiles requested, BMNH. MS.F.) he had had a similar experience. 'I much regret to hear', wrote Day, 'that the reptiles of the British Museum were not freely open to your inspection when you were in London. I hear that Dr Günther ordered them to be so closed from view.' (Day to Peters, 14 October 1874, ZMB.MS.) On 21 December Day wrote to Peters that he had had some correspondence 'with the Officials at the British Museum respecting Dr Günther's obstructiveness' and he had told Owen of Peters' troubles during his visit; Owen had asked that Peters write direct to him if he had any complaints so that Owen would then 'be in a position to obtain the passing of definite rules on the subject for future guidance' (ZMB.MS.). As far as can be judged, Peters did not do this but wrote instead to Day, who sent an extract of the letter to Owen (now headed 'Abstract from Peters' letter to Day [Sept. 16, deleted] Dec. 21. 1874', BMNH.MS.G. **16**). In his letter Peters said that he had had no difficulty 'in seeing those specimens of the Brit. Mus. *which I could point out,* and I must in this respect acknowledge the great courtesy of Mr O'Sh.[aughnessy, the Assistant]. But I was not allowed (by special orders of Dr Günther as Mr O'Sh. told me) to see the collections *as I was accustomed to do before Dr G.*

became Assistant Kpr. . . . We have the same rules as the Brit. Mus. but the interpretation depends on the liberality or narrow minded disposition of the Keeper.'

Owen sent this extract down to Günther and expressed much concern since Peters, as Director of the Berlin Zoological Museum, was clearly an important visitor (30 December 1874, BMNH.MS.G. **16**). Once again, Günther had been on leave when the incident occurred. To make things worse, Gray had just retired from the Keepership (21 December) and although Günther was the natural successor and stepped into the breach, his formal appointment as Keeper of Zoology was not made until the following February and he was presumably anxious not to offend the Trustees in any way. His reply to Owen, as had been his earlier reply over Day's complaint, was patient, reasonable and correct. The Spirit Room had never been open to visitors except under supervision ; he had 'considered it my duty to remind Mr O'Shaughnessy, with the cognisance of Dr Gray, of that standing order, when I left for my holidays' ; it was not intended solely for Dr Peters, who was 'the first man I should have exempted from it' (30 December 1874, BMNH. MS.G. **16**).

This 'standing order' dated from late in 1864 when a small notebook was begun in which visitors were asked to enter the name of the species and letter-mark of the specimens (from Günther's *Catalogue*) which they wanted to examine. This instruction is given inside the cover of the two surviving books (BMNH.MS.F.), together with the warning that visitors 'are not allowed to take the specimens out of the cases' to which, in the first book, was added, and in the second book copied, the important restriction 'or to enter the spirit room by themselves'. The question of the safety of the specimens had been raised earlier that year by Gray in a letter to Günther in which he said that complaints had reached him that 'some of the type specimens of Reptiles & fish have been injured by being cut into under the pretence of examining some part of their anatomy'. This letter, dated 1 June 1864, was pasted inside the first notebook, then removed and pasted into the second. Thus the Assistant on duty could warn visitors of the rules.

Both Owen and Günther wrote to Peters with assurances and apologies and there one would have expected Peters to have left the matter. Unfortunately, however, Günther could not help taking a swipe at Day, the instigator of the plot as he saw it (letter not seen, probably in Berlin ; possible undated draft in BMNH. MS.G. **16**). Peters reacted strongly (Peters to Günther, 3 January 1875, original in German and Günther's translation into English, BMNH.MS.G. **16**). He admitted that his letter had replied to Day's request that he make an official complaint but,

> There is no foundation in your supposition that persons who do not wish you well, have influenced my judgement. On the contrary, I have heard only that by which your exertions, literary as well as museological, are acknowledged, even from Day. . . .

Nor was Peters prepared to dismiss this as an isolated incident. He reminded Günther of two previous occasions '. . . which I have got over but not forgotten'. He continued :

> Therefore I am inclined to think that you deceive yourself when you believe [yourself] to have been particularly liberal to others. And it is my conviction that, if you could really carry out this principle, nobody would have a more pleasant or better position. For who has such means as you in the richest of all Museums, for gladdening and obliging those who look for instruction?

That Peters treated the whole affair as more than just a temporary disagreement is shown in the final paragraph of his letter.

> I have lived many a happy day in London, and I believe that the connexion which obtained between our two Museums, had been to mutual benefit. If I do not see again the former, and if the latter is broken, I regret it the more as the essential cause has been a german-born countryman, although I will, after your last letter, no more assume the deliberate intention. Good-bye.

Günther would not have needed to translate this into English, so he was presumably requested to do so by Owen and he cannot have relished the task. If Peters was to be taken seriously, and Owen had already made it clear to Günther that he regarded Peters as one of the 'distinguished original Contributors to our common Science' (Owen to Günther, 30 December 1874, BMNH.MS.G. **16**), then clearly this greatly strengthened Day's case against Günther. Moreover, Day was much more dangerous ; he visited the Museum weekly and, unlike Peters, he showed no reluctance to take his complaints over Günther's head.

Not only had Day been instrumental in causing a serious rift between London and Berlin. Through him, the delicate web of relationships within the Museum, never very harmonious, was also affected, for at the foot of his letter to Günther of 3 January 1875 Peters added the following footnote.

> P.S. At this moment I receive a note from Mr O'Shaughnessy who emphatically asserts never to have received an instruction which you assure me to have given. I cannot find leisure to enter into correspondence with him, especially as I have expressly stated his courtesy, and I have asked Mr Sharpe to sift the matter.

Some explanation is required of the position occupied by Arthur O'Shaughnessy (1844–81). A protégé of Edward Bulwer Lytton (later Lord Lytton, who had entered into a morganatic relationship with his aunt), O'Shaughnessy had joined the Museum as Transcriber in the Department of Printed Books in 1861. Two years later he was transferred to the Zoology Department as an Assistant in entomology, largely on the recommendation of Gray in an attempt to block the possible appointment of Henry Bates, lately returned from his South American travels and a firm supporter of Darwin. The subsequent and, for Gray, embarrassing discovery that O'Shaughnessy's poor sight and awkwardness rendered him totally unfit to handle insects led to his further transfer in 1864 to the Geology Department, but in practice (from 1865) he was assigned to Owen as clerical assistant but on loan also to Günther in the preparation of the *Catalogues*, the *Zoological Record* and the registers, as well as in curation of the fish and reptile collections.

As Paden (1964a) has shown, O'Shaughnessy, the minor Victorian poet* and a man quite unsuited to a zoological career, became both a pawn in the struggle for authority waged between Richard Owen and the ailing J. E. Gray, and the object of a bargain between Owen and Lord Lytton whereby O'Shaughnessy's continued employment by the British Museum was a tacit *quid pro quo* in Owen's campaign for political support for his cherished dream of a separate museum for natural history. What O'Shaughnessy brought to this tangle of interests was nothing more than a capacity for incompetence and the crime of leaving a box of lucifers on his table in the Spirit Room. The story is well documented by Paden (1964a) and his account is summarized here. Having previously supported O'Shaughnessy to prevent the entry of Bates (and Darwinism), Gray now felt it expedient to engineer O'Shaughnessy's dismissal by means of a short letter to the Principal Librarian, John Winter Jones, pointing mainly to the serious fire risk arising from leaving matches in the Spirit Room (24 October 1870). What Herbert Spencer had called 'the greatest boon and blessing that has come to mankind in the 19th century' was to prove a sore embarrassment to O'Shaughnessy. In November 1870 he was called before the Trustees, but largely through Owen's recommendation for leniency (triggered successively by O'Shaughnessy's pleas to Lytton and Lytton's bargain with Owen), O'Shaughnessy escaped with merely a severe reprimand. In February the next year Gray tried again, but he made the tactical mistake of a direct request to the Trustees to remove O'Shaughnessy from the Zoology Department (on the grounds of his lack of aptitude, unpleasant manner and bad example to other Assistants). The two evidently did not get on well and in O'Shaughnessy's opinion Gray was 'as impervious to such [propitiatory] words as a wild beast in his den. He would not even hear one of them, as from the very first he had always stopped me with a savage unintelligible splutter of his own. He has a way of gnashing his teeth at me . . .' (O'Shaughnessy to Lord Lytton, in Paden, 1964a : 24).† Owen was now requested to comment on Gray's report and this time he needed no prompting from Lord Lytton. He gave full support to O'Shaughnessy, scoffed openly at Gray's accusations and clearly demonstrated his authority, as Superintendent of all *four* Departments of natural history, over Gray the Keeper of Zoology. Günther also supported O'Shaughnessy, but his report was withheld from the Trustees by Gray (which only intensified the struggle once Owen and Günther discovered what had happened). The Principal Librarian initially took

* O'Shaughnessy published four volumes of poetry: *An epic of woman* (1870), *Lays of France* (1872), *Music and moonlight* (1874) and *Songs of a worker* (1881 – posthumous). The ode beginning 'We are the music makers/And we are the dreamers of dreams' most frequently finds a place in anthologies. In 1902 Edward Elgar seems to have come across it and been fascinated by its musical possibilities, eventually publishing *The music makers – ode* (Opus 69) in 1912 (HMV ASD 2311 apparently the only extant recording); in a letter of 19 July of that year, Elgar wrote: '. . . "World losers and world forsakers for ever and ever." How true it is' (Kennedy, 1968 : 131 – we are indebted to S. C. A. Holmes for drawing attention to this Elgar/O'Shaughnessy link). Authors are agreed that O'Shaughnessy as often failed to reach these heights, but of the best Percy (1923) wrote 'By some sorcery this man produced beauty of a rare and charmed and perfect kind; and this he gave to the world.' *Chaitivel* is such a poem.

† A photograph of Gray (fig. 4 in Gunther, 1974), taken some years earlier in 1863, shows a rather formidable man who could well have been intimidating to a young Assistant. Günther, who frequently referred to Gray as 'his beloved chief', also spoke of him as 'a most curious man: one day the most kind hearted creature; at other times malice itself' (Günther to his wife Roberta, 25 October 1868 – cited in Gunther, 1975 : 155).

Gray's side, most probably because of his opposition to Owen's plans for splitting off the natural history portions of the Museum. In the event, O'Shaughnessy's pay increments and future promotion were made dependant on a satisfactory report to the Trustees and this Owen and Günther hastily arranged (behind Gray's back) by means of a test in the identification of a recent collection of reptiles. Gray's defeat was complete once his suppression of Günther's report was made known to the Principal Librarian. In any case, he was shortly forced to resign on grounds of health (21 December 1874).*

On New Year's Day 1875, when relations between Day and Günther, and between the latter and Peters, were already severely strained, O'Shaughnessy decided that he should attempt to clarify matters. Günther had probably spoken with O'Shaughnessy on 30 December (on receipt of Owen's request for an explanation) and O'Shaughnessy perhaps felt that he was being blamed for the affair. To exonerate himself, but with no intended disloyalty to Günther, he wrote the following to Peters.

> I have been much grieved to learn that you have expressed yourself dissatisfied with your very short visit to the Reptile Collection last Autumn . . . I was so truly under the impression from what you said that I had given you all the facilities you required that it would be almost unfair to myself not to write to you on the subject. And first of all I would state most emphatically that such an order as that *you* or any other person 'should not be permitted to see the collections' has never emanated from Dr Günther, nor have I so interpreted his meaning, nor have I acted in such a manner to any visitor scientific or otherwise. On the contrary I frequently open the Cases to visitors or students & assist herpetologists wishing to make general comparisons to select & find the specimens in the *Cases themselves*. This however you did not request me to do.
>
> (O'Shaughnessy to Peters, 1 January 1875, ZMB.MS.)

Apparently, Peters merely gave O'Shaughnessy a list of specimens to be brought out. There was also some misunderstanding over whether Peters required a table at which to work, but O'Shaughnessy 'distinctly understood you to say (& others also) that it was not necessary . . .' (loc. cit.). Presumably one of the 'others' was R. Bowdler Sharpe, ornithologist and Assistant in the Zoology Department, to whom Peters (in his footnote) said he would write 'to sift the matter' (see p. 73).

Far from healing matters, O'Shaughnessy's letter seems to have confused the issue even further. In Peter's eyes, O'Shaughnessy was virtually calling Günther a liar : Günther had issued an order, O'Shaughnessy now denied it.

The Visitors' Room and the Spirit Room were on opposite sides of a courtyard, with O'Shaughnessy's room adjoining the Spirit Room, the latter being 'not used for *working in* simply because it has long been unfit for that purpose' (O'Shaughnessy

* Copies of the reports on O'Shaughnessy by Gray and Günther, as well as relevant letters, are in BMNH.MS.Rep. **6** and **7**, including Gray's testy statement that 'I hear he is not deficient in talent, either as a musician, an artist or poet; but these are not qualifications that are useful to me in the Zoological Department' (**6** : 177).

to Peters, loc. cit.). In some way Peters misunderstood and, in Günther's eyes, this would place Peters on Day's side since he probably saw the affair as an extension of his quarrel with Day. At all costs Peters must be won over and he wrote him a second placatory letter regretting that his first had not succeeded and suggesting that the apparent contradiction between his statements and those of O'Shaughnessy could have resulted from a misinterpretation of O'Shaughnessy's words (undated draft, in German, BMNH.MS.G. **16**). To Günther's relief, Peters agreed to forget the unpleasant events, feeling it unjust to blame Günther for the awkwardness of an Assistant and especially of one who had not been of Günther's own choice (Peters to Günther, 11 January 1875, in German, BMNH.MS.G. **16**). Peters may also have had in mind his brush with O'Shaughnessy of a few years earlier, the latter in his first herpetological paper having had the temerity to question the validity of a lizard species named by Peters (O'Shaughnessy, 1869a). The quick retort (Peters, 1869) and the equally hasty defence (O'Shaughnessy, 1869b) were not forgotten, at least by O'Shaughnessy, who made another unsuccessful attempt to justify himself (O'Shaughnessy, 1875), significantly not long after Peters' apparent acceptance of Günther's and not his own version of what had been said during Peters' visit to the Museum in September of the previous year.

O'Shaughnessy continued as Assistant until his early death in 1881, having suffered tragic personal losses in the deaths of his two sons and of his wife (Paden, 1964b). The young Edmund Gosse once described his appearance in the British Museum as 'a sort of mystery, revealed twice a day. In the morning, a smart figure in a long frock-coat, with romantic eyes and bushy whiskers, he would be seen entering the monument and descending into its depths, to be observed no more till he as swiftly rose and left it late in the afternoon' (Gosse, 1925 : 124). He wrote a further nine papers, edited the *Zoological Record* (1873–79) and coped with the transfer of all data on specimens to the students' copy of Günther's *Catalogue*, as well as routine matters of registration. There is no mention of his name in Day's letters or manuscripts, but Day must have come to know him well during his frequent visits to the Museum. One wonders was he merely irritated by the short-sighted young man, or did he find time to explore the other O'Shaughnessy, the dreamer of dreams so sublime as *Chaitivel*?

For a while all seems to have gone smoothly. Day wrote his weekly requests to examine material and the specimens were set out in the Visitors' Room. On one occasion Günther's private feelings appear in a pithy comment scribbled on the back of one of Day's requests (15 April 1875, BMNH.MS.Z.).

> Altogether
> 100 specimens in spirit
> 33 dried specimens
>
> ---
>
> 133 specim. examined between 11 & 12.30
> or 3 specimens every two minutes. AG.

Early the following year Day complained of wasted journeys because he was not informed of unavailable material until after his arrival at the Museum (Day

to Günther, 23 January 1876, BMNH.MS.Z.). This became even more annoying when Day moved in February 1876 to his final home, Kenilworth House in Cheltenham, since his weekly visits now involved a long train journey and considerable expense.* On one occasion he was so incensed that he wrote to E. J. Meirs, Gray's amanuensis, enclosing a shilling stamp so that Günther, should he be unable to let Day know in time when a visit was inconvenient, might telegraph 'without risking pecuniary loss' (undated, BMNH.MS.Z.). This was not the only annoyance. In December 1876 Day was still having difficulty over inspecting the Registers. He wrote asking to see from the Register what fishes the Museum had obtained from Brisbane Neill 'along with *Barbus guentheri*/68.10.23–24 collected by myself' (5 December 1876, BMNH.MS.Z.). Apparently he expected difficulties, for he wrote a second letter that day requesting to see the 'register of the British Museum fish for 1868 which as I understand you refuse to permit my having access to' (loc. cit.). The result of this demand is not recorded, but possibly Günther acceded for fear of another memorandum to his superiors.

Only a few months passed before Day found yet another obstruction in his way. In April 1877 he exploded with indignation on discovering that five of the glass-stoppered bottles that he requested set out for him were tied over with bladders 'so as to prevent them being opened and the specimens examined, and this (if I am not mistaken) has been done quite recently – perhaps since I wrote, some days ago'. He asked if it was intended that he should take the bladders off 'as it is useless looking through a round bottle as everything is distorted' (April 1877, BMNH.MS.Z.). Having visited the museum in Paris (in 1874, ZMB.MS.) Day was quite familiar with this method of sealing specimen jars (which is still in use there today and requires a scalpel and some courage, knowing the trouble required to re-seal them) but it was not then or now a practice in the British Museum.

Letters such as this imply that Day usually did not meet Günther during his visits to the Museum. Two letters (one undated but from Ryde, the other 19 August 1874, BMNH.MS.Z.) indicate that, at least on those occasions, the Attendant Tomlinson and not O'Shaughnessy was responsible for finding the jars and setting them out on the visitors' bench.† Thus, direct confrontations between Day and Günther may have been rare. It is unfortunate that the Cheltenham material does not include any of Günther's replies, if indeed he thought an answer worth while. For example, in 1874 when Day was working through his Serranidae, what was Günther's response to the following jibe?

> Should there be no objection I should also feel obliged if you would kindly have the blue lines on Col. Playfair's specimen termed *Mesoprion notata*

* Ten years earlier Day had claimed £2.2.0 for the return journey from the Board of Revenue – *Proceedings*, 4 June 1866, in Q 658. This is rather high and may have included the cost of a cab at either end since in 1886 the Paddington–Cheltenham fares for first, second and parliamentary classes were respectively £1.0.0, 15s. 0d., and 10s. 1d., or return £1.14.0 and £1.6.0 (no parliamentary return fare). We are indebted to Mr J. E. Norris of the Railway Club, London, for this information.

† Robert Tomlinson, appointed in March 1858, was made Attendant for duty in the Spirit Room and Store Rooms in 1865, where he attended to students and visitors, brought out and put away specimens, painted and wrote labels on jars, and entered all recent additions into the *Catalogues* (BMNH.MS.Doc. **1** : 152). Altogether there were ten Attendants in the Zoology Department at this time (BMNH.MS.Doc. **1** : 387).

> touched with spirit as they appear to me to be merely paint unartistically applied.
>
> (undated, with letters of 1876 but surely 1874, BMNH.MS.Z.)

This was one of the Zanzibar species listed by Günther in the *Fishes of Zanzibar* (Playfair & Günther, 1867) and he had drawn particular attention to the blue lines of this lutjanid as a feature distinguishing the species from the related *M. fulviflamma* (both placed by Günther in the genus *Genyoroge*). The implication was obvious, especially as Günther would have been responsible for having the colour of the specimen restored (presumably for display purposes). Two small dry specimens from Col. Playfair's Zanzibar collection were entered into the students' copy of Günther's *Catalogue* under *Genyoroge notata*, but the largest (which still retains faint blue lines) seems to have been varnished over the moribund colour pattern and Day could not have objected to it. A larger dried specimen labelled *Genyoroge bengalensis*, also a Playfair fish from Zanzibar, has the vivid blue lines typical of this species (*Lutjanus kasmira* Forsskål); they have been enhanced by paint and the specimen was obviously prepared for display. In his copy of the *Fishes of Zanzibar* (Q 617), Day wrote against the species 'Russell's fish is a *Mesoprion* the *M. Russellii* (Bleeker) the *G. notata* is very distinct from this fish and is evidently *G. Bengalensis* F Day'. Presumably this is the specimen in question, but having synonymized *notata* with *bengalensis*, it is difficult to see why Day should have objected to the characteristic blue lines, unless perhaps his recognition of the synonymy came much later.

In 1878, having written the final part of the *Fishes of India*, Day composed a Preface in which he acknowledged the help he had received. Professor Peters 'most freely gave me access to the valuable contents of the magnificent collection of fishes under his charge', while the late Dr Bleeker 'permitted me free access to his invaluable fish'; for Günther, however, there was an even more insulting snub than in the *Fishes of Malabar*:

> Among the Officers at the British Museum, I must record my acknowledgements to *Professor Owen*, C.B., Mr Winter Jones, and the late Dr J. E. Gray, for such help as they were able to afford me to obtain free access to the Ichthyological collection.

Two years later, Günther published his *Introduction to the study of fishes* (Günther, 1880). In his list of 'Recent works' he spoke of the *Fishes of India* as being 'in progress' and 'not yet complete', to which Day commented 'The last part was published in 1878, when the India Office at my suggestion presented Dr Günther with a copy' (Q 483 – see also p. 68).

Completion of the *Fishes of India* did not bring any respite in the battle between Day and Günther, for Day had already begun his *Fishes of Great Britain and Ireland* (1880–84) and it was still necessary to visit the British Museum. In August 1880 yet another quarrel erupted, this time over the artist Mintern. According to Day, Günther 'tried in 1874 to induce Mr Ford not to illustrate my Fishes of India! If this is scientific, it appears to be a new phase of evolution' (Day to Peters,

8 November 1880, ZMB.MS.). It now appeared to Day that Günther was using the same tactics over Mintern.

Day had already decided to draw the specimens himself, but for the lithography he had employed C. Achilles (who had earlier worked with Day on the plates for the *Fishes of India*). By April 1880 Achilles had done over 50 of the fishes, but unfortunately, as Day complained to Peters, 'he destroys specimens' (11 April 1880, ZMB.MS.). Could Peters let him have any specimens for such an artist, for which Day offered a good exchange of British or Indian fishes. Achilles completed 66 plates before Day attempted to replace him by Mintern.

From the extant letters it is clear that Günther had got wind of this. He no doubt objected to Day's bland assumption of Mintern as 'my professional artist' (Preface, *Fishes of Great Britain*) and, more important, he too planned a work on British fishes for which Mintern was to be the artist. Günther therefore wrote to Mintern. How he worded it is not recorded, but Mintern thanked him for his note about Day and said that Day had called in a few days ago with a request and Mintern had declined to draw for him ; he was surprised at Day's 'disagreeableness' (17 August 1880, BMNH.MS.G. **15**). As on previous occasions, Day drafted a savage complaint immediately. His final version addressed to Edward Bond, the Principal Librarian and Secretary to the Trustees, is dated 13 August and begins with the familiar preamble 'I have unfortunately had reason to complain several times respecting the obstructions Dr Günther has thrown in my way when examining Fishes in this Museum . . .' (13 August 1880, BMNH.MS.G. **15**). Day continued,

> My artist [Achilles] for certain reasons cannot give me the illustrations as rapidly as I require them and this day I went to my former artist Mr Mintern and asked him if he would continue the work. He had declined *solely on this reason* that Dr Günther had warned him not to do any work on British Fishes for anyone as he proposes personally to write on the subject at some future date . . . owing to Dr Günther's jealousy and extreme fondness for obstructing myself in every way in his power I am stopped in my work by his threatening my Artist. . . .

In Day's eyes, the whole matter was obviously a conspiracy. As he later wrote to Peters, Mintern was the only fish artist in London and he had now been intimidated by Günther (8 November 1880, ZMB.MS.). Under the auspices of the British Museum, Günther had brought a great deal of work to Mintern and the latter would certainly not suffer in any way by not drawing for Day.

Günther, however, had his usual well-reasoned explanation (draft on back of copy of Day's complaint, probably 14 August 1880, BMNH.MS.G. **15**). He said that Mintern had alluded to 'a work on British Fishes, for which he had finished for me already one plate, & had another in hand . . . I felt bound to tell him I had lately heard of Mr Day contemplating a similar work, and that I thought it likely his services would be required by that gentleman . . .'. Although Günther claimed it might be some time before his own work went ahead, it would not be

right for the same artist to illustrate the same species and perhaps the same specimens for books on the same subject. Therefore,

> I left Mr M. at liberty to act as he pleased . . . I simply claim my right to decline for my work an artist who is engaged on a work of the same kind, be it Mr Day or anybody else.
>
> (Günther to Owen, loc. cit.)

Edward Bond found this 'quite satisfactory – it being understood that there is no threat of withdrawing Museum work from Mr Mintern on account of his executing cuts for Mr Davies [Day intended] or other person wishing to employ him . . .' (Bond to Günther, 18 August 1880, BMNH.MS.G. **15**).

Bond therefore wrote to Day that he had referred Day's letter to Günther and 'as both you and he are engaged in preparing a publication on British Fishes, he thinks it inconvenient and against the interests of either work that the same artist should be employed on both. . . . This is a matter which cannot be considered to concern the Trustees.' (20 August 1880, BMNH.MS.G. **15**) In retaliation, Day stated in the Preface to the *Fishes of Great Britain and Ireland* that he had 'personally delineated every species from nature. Why I was unable to retain the services of my professional artist the subjoined letter . . . will explain.' He then appended Bond's letter of 20 August as a footnote. As if to emphasize the insult, Günther received a letter from J. S. Keltie, the Editor of *Nature*, inviting him to review the first part of the book and offering to send a copy should Günther not possess one (undated, BMNH.MS.G. **2**). No review appeared and, as Theodore Gill noted in his review of Günther's *Introduction to the study of fishes*, the latter made no mention of Day's book even though the first two parts had by then been published (Gill, 1881).

In his reply to Bond's letter, Day could do no more than reiterate that 'almost every obstacle Dr. Günther has been able to throw in my way of examining the collection of Fishes in the British Museum he has persistently employed for the last few years ; and when I arrived in this country in 1874 . . . he attempted to prevent Mr Ford illustrating my work' (Day to Bond, 26 August 1880, a copy sent down to Günther by John Taylor, Assistant Keeper in the Director's Office, BMNH. MS.G. **15**). Mintern remained loyal to Günther and the other 113 plates were drawn by Day, lithographed by A. Hammond and printed by M. & N. Hanhart of Charlotte Street, London ; the earlier plates by Achilles (but all drawn by Day) were printed by Mintern Brothers.

The affair lay fallow through September, but in mid-October Day renewed the attack. He went to see the Principal Librarian and charged that Günther was in fact employing artists privately but using them during official hours. Here, surely, was a matter for the Trustees. Bond sent down to Günther Day's written accusations and said that he had dispatched a note to Day 'desiring him to prove his charge of your misemployment of Official time or to withdraw it with apologies'. (Bond to Günther, 14 October 1880, BMNH.MS.G. **15**) Day obviously relished this opportunity, for he sent five folio pages describing how Günther 'passes official time in non-official work', such as his projected British Fishes, the Challenger Report, some encyclopaedia and related work, and the fishes of the Godeffroy

Museum ; Günther could intimidate artists because of the power he had over them in handing out a considerable body of work 'due to the sanction, I assume, he has received from the Trustees of engaging in private and non-official work during official hours' (Day to Bond, 16 October 1880, BMNH.MS.G. **15**).

This was not the first time that such an accusation had been levelled at Günther. Ten years earlier O'Shaughnessy had mentioned in passing that 'I have corrected proofs & rewritten numbers of Papers, articles &c (not Museum work) in Museum time for Dr Günther . . .' (O'Shaughnessy to Lord Lytton, 4 November 1870, Knebworth Archives, cited by Paden, 1964a : 18). What Day may not have realized – but O'Shaughnessy would have known – was that Günther's official day ended at 3 p.m. (Official Diary, BMNH.MS.G. **3**). Günther must frequently have worked long after this on official projects, certainly in summer when the light was good, and probably felt justified in setting private work off against this. At any rate, he seems to have extricated himself fairly easily, for Day later reported to Peters that he had 'handed up the question to the Principal Librarian who decides it is not official but a matter for Dr Günther's private feelings so he will not interfere' (8 November 1880, ZMB.MS.). Günther's private feelings seem to have been that this was yet one more of those 'insane attacks' on him for which Day had 'rendered himself notorious' (BMNH.MS.G. **2** – see p. 106).

Day's complaints of the obstructions that he encountered at the British Museum were levelled almost solely at his rival. It is interesting to speculate whether Day ever came across a certain Stefan Poles, author of a pamphlet entitled *The actual condition of the British Museum* (Poles, 1875), since this 'literary expostulation', written in the same period as Day's battles, echoes the spirit of frustration that many visitors to the Museum must have felt. Poles' diatribe, well written and apparently well informed, dealt largely with the mismanagement and with the injustices to junior staff and to visitors perpetrated by the more senior library staff ('a clique of jobbing ignoramuses'), with particular venom reserved for Winter Jones, the Principal Librarian ('a kind of literary Mrs Squeers'). At a time when he was pleading to see an up-dated catalogue of the fishes – after nearly ten years of contact with the Museum – Day would surely have agreed that the British Museum and the Vatican 'vie with each other in decrees hostile to progress and enlightenment'.

By now the bitterness between Day and Günther would seem to preclude any normal communication between them. Yet, in 1883 Day showed a willingness to give specimens to the British Museum and he made the offer direct to Günther. In addition, the Museum, which had declined to buy Day's main collection in 1875, now had a fleeting opportunity to purchase Day's No. 2 collection. The occasion was the Great International Fisheries Exhibition held on the site just behind the present British Museum (Natural History) (then recently built and engaging most of Günther's time in transferring and arranging the collections).

Day was the obvious choice as Commissioner for the Indian Department of the exhibition and he filled the Indian Court with a representative selection of Indian fishes and examples of fishing gear. In the *Catalogue of the exhibits in the Indian Section* (Day, 1883), he explained that much of the material had been sent by

John Anderson of the Calcutta Museum, George Bidie of the Madras Central Museum and Dr D. McDonald of the Victoria and Albert Museum in Bombay (thus representing the three Presidencies). However, the Secretary of State also authorized Day to exhibit some of his own spirit-preserved specimens and Day included no less than 810 species (Day, 1883).

Towards the end of the Exhibition, which had begun in May, Day wrote to Günther inviting 'some competent person' to select from the official exhibits any that might be of interest to the British Museum (18 October 1883, BMNH.MS.Z.). Unfortunately – but perhaps inevitably – this scheme was to be the vehicle for yet another quarrel. A new member of the Zoology Department, G. A. Boulenger (1858–1937), had been appointed to serve on Jury No. 26 and, as luck would have it, it was this Jury which severely (and in Day's opinion, most unjustly) criticized the Indian exhibits and in particular John Anderson's stuffed cyprinid fishes from Calcutta. Day took immediate offence and requested that the specimens 'be not considered presented to the British Museum until further notice . . . which I do not now anticipate will be accorded' (Day to Günther, 8 November 1883, BMNH. MS.Z.). Günther replied and Day acknowledged his letter but expressed little doubt that the specimens for the British Museum would be withdrawn once he had reported 'the manner in which the Calcutta carps have been treated by Jury No 26, which comprised one of your staff . . .' (11 November 1883, BMNH.MS.Z.). Günther evidently sent a hasty and conciliatory letter in which he pointed out that the ill-fated Jury No. 26 had reached their decision on a day when Boulenger had been absent; for his part he was quite satisfied with the condition of the Calcutta fishes. Mollified, Day replied that 'Your opinion respecting the stuffing of the Indian fishes quite effaces the award of Jury 26 and I will therefore request you to consider my letters cancelled' (15 November 1883, BMNH.MS.Z.).*

In the end, the Museum received 100 stuffed and 27 spirit-preserved specimens from the Secretary of State for India. These were not part of Day's own collection, but it was during the Exhibition that Day negotiated the sale of his second best series of specimens, not to the British Museum but to the Australian Museum in Sydney (see below, p. 144). There seems little doubt that this collection would have been offered to Günther had circumstances been otherwise, its purchase by Sydney perhaps being merely consequent on the proximity of the Indian and Australian Courts and the opportunity of being able to commiserate on the iniquity of Jury No. 26.

Early the next year, Day wrote again to Günther, this time to say that he proposed 'dividing the Zoological specimens in the China Court [which adjoined the Indian Court] next week. As I should wish to first know what are desiderata for the Natural History Museum I should be obliged by your selecting such forms as you require prior to the general division being made.' (6 January 1884, BMNH. MS.Z.) Day proposed meeting Günther in the China Court the following Monday, but the highly efficient postal services of those days† brought the letter to Günther

* In fact, the exhibit gained a gold medal (Anon., 1884 : 461), so presumably Günther or Boulenger managed to annul the earlier verdict.

† Letters and their replies between Günther and Day often bear the same date, even when Day went to live in Cheltenham; within London it was possible to receive an answer to the *reply* on that same day.

the following day (Monday) and Günther waited in the China Court in vain (inferred from Day's apology, BMNH.MS.Z.). The selection was made, however, and the British Museum received 89 Chinese fishes (BMNH.1884.2.26.1–89).

After 1876, Day's visits to the British Museum were less frequent, at least to judge from his requests to Günther (which were phrased no less formally than those of a decade earlier). On one occasion he was bold enough to demand to 'go through the Spirit collection of Salmonidae' (14 May 1885, BMNH.MS.Z.), but usually a list of species was enclosed. He made eight visits in 1882, five the next year, then four, three, six, two and finally four in 1888. He usually arrived at ten or half-past on a Tuesday morning and appears to have stayed at Rawlings Hotel in Jermyn Street when in London, sometimes returning to the Museum on the Wednesday. Mostly he was preoccupied with salmonids and British fishes, or with the revision of the *Fishes of India*.

Meanwhile, he had not forgotten Günther's 'theft' of the artist Mintern. It still rankled and in 1887, seven years after the affair, Day found an opportunity to revive it. In the Preface to his *British and Irish Salmonidae* (1887 : vii) he again quoted Bond's letter of 20 August 1880, this time as being 'my apology for the illustrations [of salmonids], having been drawn by myself'. He went further, adding

> Seven years have now elapsed since Dr Günther, *Keeper of the Zoological Collection of the British Museum*, induced Mr Mintern to break his agreement and cease engraving for me on the above plea. Dr Günther's work, stated then to be in the course of preparation, has not yet been advertised!

Günther never produced such a book, but a bound manuscript of 332 folios in the Linnean Society library, London, throws some light on his intentions. The title page is neatly headed 'Guide to an elementary knowledge of British Fishes By Albert C. L. G. Günther M.A., Ph.D., M.D., F.R.S.' The manuscript is undated but reference is made to Day's *British fishes* (1880–84) and also to his salmonid book (1887). However, the descriptions of fishes that comprise the bulk of the book may be fair copies that were brought up to date in later years. There is a Preface which states the object of the book to be first, a means of identifying species, and second,

> To serve as a prodromus for a more extended and fully illustrated work, for which materials have been collected for many years, and for which the first illustrations were actually prepared as far back as 1870.

That this last remark was for Day's benefit seems almost certain from the many subsequent references to Day in the text, e.g. under *Raja maculata* (f. 43), *Pagellus centrodontus* (f. 87), *Echeneis remora* (f. 125), *Trachinus vipera* (f. 128) and especially among the salmonids. Under *Salmo* Günther wrote,

> *Note.* – It is not my intention, and in the present work it would be out of place to enter into a discussion of arguments – if statements devoid of fresh evidence can be so termed – that have been brought forward by the author of the 'Fishes of Great Britain and Ireland' against my method of the treatment of British

> Salmonoids. Those whose duty it may be in future years to compare my writings with those of my opponent, may perceive the extent to which they have been distorted.

The argument chiefly revolved around the taxonomic status of the numerous races, varieties and species of salmonids and the value of the characters used to separate them. Day (1880–84 : 59) found most of the characters used at that time to be 'fallacious' and he thus advocated recognition of rather few species but a number of varieties. Günther favoured the opposite tactic and in his *Catalogue* (vol. 6), as well as in the Linnean Society MS., he gave as distinct species what Day considered mere varieties (83 species of *Salmo*, in two subgenera, in the *Catalogue*). Although subsequent work has leant towards Day's solution, there is still room for argument about the degree of genetical isolation between the various races in this highly complex group of fishes.

Early in 1891 an opportunity arose for Günther to publish his 'Guide to British Fishes'. He received a letter from Macmillan & Co. asking him to give an opinion on a proposed 'Handbook of the Fishes of Western Europe' to be written for them by the man who was to become America's greatest ichthyologist, David Starr Jordan (19 January 1891, BMNH.MS.G. **24**). In a letter whose tone recalls the one that damned Day's *Fishes of Malabar* nearly thirty years before, Günther conceded that Jordan was 'a very conscientious writer on ichthyolog. matters', but his rather small ichthyological collections forced him to be a compiler from the work of others. More serious, however, was the fact that Jordan was 'an adherent of the rules of zoolog. nomenclature established by American naturalists to supercede the nomenclature followed in Europe', which would confuse and perplex non-specialist European readers. But in any event, assured Günther, there was no demand for such a book on European fishes. What *was* badly needed was a handbook on British fishes 'but I cannot see that Mr Jordan should undertake it'. However,

> I think it, under the circumstances, only right to inform you that I have such a work in hand, and hope to complete it in the present year.
>
> (Günther to Macmillans, 21 January 1891, BMNH.MS.G. **24**)

Not unnaturally, Macmillans took Günther's advice and declined Jordan's proposed book, in the same breath gladly accepting Günther's book should he not have a publisher in mind (23 January 1891, BMNH.MS.G. **24**). Günther expressed his gratification at the confidence that they had shown him and promised the book by the end of the year (draft, 26 January 1891, BMNH.MS.G. **24**). A year later came a gentle hint from the publishers (28 January 1891), to which Günther answered that about 'three fourths of the M.S. of my Synopsis of British Fishes are done' and he promised completion by April (draft, 16 January 1892, BMNH. MS.G. **24**). Another year went by and with another enquiry from Macmillans Günther sent the manuscript as it stood (draft, 13 February 1893, BMNH.MS.G. **24**). Macmillans even agreed to bear the cost of the 250 figures (24 February 1893, BMNH.MS.G. **24**) and a contract was drawn up, Günther pencilling on the

accompanying letter 'I push on illstr. so as to be ready in May' (27 February 1893, BMNH.MS.G. **24**).

For some reason, the final fourth was never written. The book would in no sense have been a rival to Day's, being as Macmillans put it 'rather more of a mere catalogue than we had supposed', although with illustrations they could see a 'fair sale among naturalists' (15 February 1893, BMNH.MS.G. **24**). When Günther had first been approached, Day's *British Fishes* could hardly have been called out of date, but there was probably a place for a smaller and less expensive handbook or guide. This need did not diminish during Günther's lifetime and since the terms of the contract with Macmillans were quite favourable (half the profits), the reason why Günther failed to finish the book must remain a mystery.

Quarrels such as those over Mintern or access to the collections or the book on British fishes are one thing. Provided that enough evidence exists, it is possible to comment on the ethics of the two contestants. The battle in the literature is more difficult, but one must admit that Day sometimes dismissed Günther's views without fairly stating them and without a clear rebuttal. Günther, on the other hand, was equally guilty and especially in his earlier comments in the *Zoological Record*. It is an example of the frequent conflict between specialists in which emotional issues disrupt scientific dispute. To some extent emotional involvement can stimulate scientific activity, but from the time of Francis Bacon emotion has been regarded with distrust. Whatever spur it may have provided for either Günther or Day, the verdict a century later must be that these twenty quarrelling years were quite unworthy of two such talented ichthyologists.

PERSONAL, MEDICAL AND OTHER AFFAIRS

Although very little of the material examined here touches upon Day's personal life, it has seemed worthwhile to include it, partly for the light that it throws on Day's personality (which is of obvious interest in the context of the quarrel with Günther) ; partly because it adds substance to the story of his career ; and partly also because so much of the material, and especially that in Cheltenham, is in the form of undated and obscure references or worse, practically illegible drafts, that could well be overlooked by a future biographer. The paucity of references to his two wives or to his children probably reflects the nature of the material, the bulk of which comprises letters, cuttings and documents assembled for ichthyological purposes ; any personal items are fortuitous.

In 1849, during Day's first year at St George's Hospital, his father died and his mother took over management of the estate (Day, A., 1928 : 53), his eldest brother William Ansell being only 23 and articled to a solicitor (LSRSD.) and his next brother (Edmund, aet. 21) studying mining (see Appendix). The following year his brother Henry went up to Cambridge (see Appendix), while the youngest brother, Charles, and his young sisters Mary and Alice remained at home. None seems to have been willing to make farming a career and although William came down to Hadlow House from London at weekends and showed some interest in the tied cottages, he

continued as a solicitor (Day, A., 1928).* Edmund joined the Australian gold rush in about 1851, Francis left for India in 1852, Henry took Holy Orders and followed a teaching career, and Charles set out for Canada (see Appendix). Alice, the last of the family to be born in Hadlow House, was only a few months old when her father died, but she evidently developed a great love of farming life and many years later recorded anecdotes by farmers and others recalling the times when the Days were at Mayfield (Day, A., 1928) ; unfortunately, there are disappointingly few references to members of the family.

As already noted, we know almost nothing of Francis Day's early years in India. His first leave in England was on sick certificate (ten months from 6 March 1857, but apparently he overstayed until at least 20 April 1858 (Q 646, 647) and was back at his station on 5 June – LPR.). His address in England was 7 Harrington Street North, Hampstead, London (LS., proposal form), at least in June, for in November he gave his address on his marriage licence as 'Basingstoke'. We do not know when or where he met Emma, daughter of Dr Edward Covey of the Shrubbery, Basingstoke, but they were married on 3 November at the Parish Church, one of the witnesses being Emma's sister Fanny (GRO. ; DNB. incorrectly gives Emma's father as 'Charles'). Emma was 21 and Day 28. It is suggestive that a Dr William Henry Covey was practising at Uckfield, only a few miles from the Day family home at Hadlow, in 1845 (Anon., 1846 : 115) ; he had qualified in 1826 and he died in 1878 (GRO.) and so could well have been a brother of Edward Covey. Since another branch of the Day family lived in Uckfield House (Hussey, 1966 : 81), it seems most likely that the Days and the Coveys knew each other.

Day seems to have moved down from London to Basingstoke, for in April of the following year he translated from the French, probably for his own benefit, three medical essays by J.-Ch. M. Boudin (military health, geography, geology) and he signed the books 'Francis Day April 10th [also 20th] Basingstoke Hants.' (Q 646, 647). The writing is very small and neat, covering 181 pages, with tabulated data neatly inserted, but there is no record that it was published. During the early part of 1858 (and possibly late the previous year) Day was attached to the East India Company's training depôt at Warley, near Brentwood on the outskirts of London (see above, p. 22). Since he was due to return to India in February, it would not be surprising if Day had engineered this temporary posting in order to spend a few extra months of his early married life in England ; or, alternatively, to supplement his leave pay.

At some time after 20 April Day and his wife made their return to India by the overland route (LPR.) and stayed first at Hyderabad and later (from late 1858 or early 1859) moved to Cochin, where Day was appointed Civil Surgeon (EIRA., MAL.). Their daughter Fanny Laura Charlotte was born on 24 November 1861,

* According to some notes made by Day's grandson, Reginald Egerton, from a letter written by Day's niece Mabel Beaumont (13 September 1921 – in Eg. 2), complications arose over the family estate. The house grounds and home farm were left to William Ansell, the remainder to be sold and the proceeds divided. William Ansell, who wanted to keep the estate together, bought out his brothers Edmund and Henry for a rather small sum, but Francis Day insisted on a proper payment, which caused a breach between them. In the event, William Ansell failed to satisfy his brothers and sisters and a lawsuit resulted in the sale of the whole property.

presumably at Cochin (FRMMF.). A picture of Cochin at this time was given by Day in his paper on the medical topography of the town and its surroundings (Day, 1861b, 1862). He admitted that it 'must be designated a healthy place', but he was highly critical of the sanitary conditions of the town and commented that the Police, were they to implement the new Police Act (1861) in the spirit in which it had been framed, could do much to improve the health of the station ; between the lines one reads something of Day's unsuccessful attempts to elicit any enthusiasm for this task from the Police. Day also found the moral state of the 'heathen (at least)' to be quite lamentable. The paper shows Day's increasing interest in natural history (lists of plants and animals from the area), and it seems to have been a trial run for his much more ambitious *Land of the Permauls*, published in 1863 (see below, p. 88).

A recurrent theme throughout the early part of Day's career in India was sickness, either his own and his wife's, or health problems in the regiments to which he was attached. At Cochin, however, he was in charge of the Civil Dispensary and his patients were principally civilians. They came from all strata of Indian society and he designated himself Medical Officer to H.H. the Rajah of Cochin (Q 650, vol. 1 ; also *Fishes of Malabar*, title page). His medical duties are well described in his report for 1860 (Day, 1861a). They ranged from dispensing the pitifully ineffective drugs of the day for fevers, dysentery and venereal diseases, to post-mortem identifications of abandoned children and amputations in cases of elephantiasis (the success of which Day was justly proud – Day, 1860b).

Most of Day's medical papers date from this period in Cochin, a major topic being fevers. In the 1860's nothing was known of the causes of malaria and the Europeans in India were virtually defenceless against it. Day made a particular study of tropical fevers, of which malarial fevers seemed to predominate, and he presented his results in a series of papers to the *Indian Annals of Medical Science* for the benefit of his colleagues in India. His earliest paper (Day, 1856) dates from when he was 'suddenly sent to the 12th M.N.I. at Bangalore, May 14th 1855, then suffering severly from fever . . .' and here he attempted to relate the number of attacks and their severity to three types of temperament, the Phlegmatic, the Sanguineous and the Bilious (the workman-like tabulation and analysis of the data belie the rather mediaeval flavour of the subject). Later, during ten months with the Hyderabad Contingent (3rd Regiment of Infantry), Day compared fevers of the Deccan with those of Bellary and Mysore (Day, 1857, 1858a) and during his leave of 1857–58 he sent off a third paper (Day, 1858b) in which he tested the theory then in dispute that malarial fevers were in some way influenced by the moon. Carefully tabulating malaria records against lunar periods, he found a preponderance of admissions to the hospital, and a greater severity of the attacks, at the time of the full moon ; also, there were noticeably more admissions in the period three days before the full or the new moon than in the three days after. In Cochin after his leave Day set out to summarize all that was known of the fevers and agues that so bedevilled the Europeans in India (Day, 1859a, b, 1860a) ; in fact, he had already published a similar summary in the *Lancet* (Day, 1858c). Fevers were the commonest of all diseases in India and about 35 per cent of the European troops were affected annually in the Madras Army. Day could do no more than

recommend that 'European Regiments, when marching through a malarious country, should not be exposed more to early morning or night air than is avoidable ; each man should have a cup of coffee, before starting, the same half way, and warm congee or rice gruel on reaching the encamping ground. Natives should also be advised not to go out with an empty stomach'.

This may seem naive, but Day and his fellow surgeons were grappling with a disease whose aetiology was unknown, whose symptoms were often confusing, and whose prevention or cure rested hesitantly on quinine, arsenic and, with less popularity, mercury. An air-borne agent seemed likely, but it was not until 1880 that the malarial parasite was found in the human host, and it was another twenty years before the anopheline mosquito was proved to be the vector. Day's contribution was to bring his excellent analytical mind to the problem and, although hampered by a faulty premise, he did his best to subject current theories to rational scrutiny.

Day had a considerable talent for gathering information. It shows in his papers on fevers, in his work on the Kurnool cholera epidemic (Day, 1866), in his fishery work in Burma and the Andaman Islands, and most particularly in his large book (over five hundred pages) entitled *Land of the Permauls* (Day, 1863). In this latter work he attempted a complete description of Cochin, its geology and geography, its administration and history, its animal and plant life, its economic life, and the languages, customs and manners of the many different ethnic groups that lived there. The chapter on fishes (pp. 487–519) is no more fully worked than those on birds, reptiles, mammals or plants, but it gives a clue to the kind of confidence that Day felt in deciding to write up a scientific paper of the fishes of the area. The book received a long and glowing review in the *Madras Quarterly Journal of Medical Science* (Anon., 1863). Day could not but have felt elated ; if he could make useful contributions to so many subjects, what was there to stop him exploring any one of these in greater detail ?* The book also gives a clue to the kind of man with whom Günther had to deal in 1865 : a young doctor of thirty-six, a year older than Günther, who had an excellent general knowledge (albeit limited to one small part of the world) but who now wanted to compete in a field that was rapidly becoming the province of specialists.

During their stay in Cochin (1859–64) neither Day nor his wife enjoyed good health. In a letter to a Mr Blackmore (quoted more fully below) Day spoke of their desire to return to England for health reasons (Q 654). Since Day was entitled to (and was later granted) ten months' sick leave, it was probably his wife who most needed to recuperate. Even after seven months of leave, however, Day was still not sufficiently recovered (letter to Denison, see p. 25 above) and he successfully applied for an additional six months of sick leave. In fact, he remained in England for almost two years (March 1864 to February 1866). In early 1865, C. A. Lawson, editor of the *Madras Times*, wrote to Day regretting to hear of Emma's continued

* In its scope, Day's *Land of the Permauls* resembles Bleeker's book on the Moluccas (Bleeker, 1856), although Bleeker's stay was very much shorter (September and October 1855). Day's eldest brother William Ansell seems also to have had this talent for collecting and synthesizing a wide range of material, judging from his book on Poland (Day, W., 1867).

ill health and hoping that 'you will not think of moving her from England this year' (26 January 1865, Q 654). In none of the letters is the nature of the illness mentioned, but it seems to have lingered on throughout Day's leave and later during their stay at Ootacamund in 1866. Chipperfield, for example, hoped that 'the hill residence has been conducive to the health of both Mrs Day and yourself' (4 August 1866, Q 654), while Day's plea to Shaw that his wife was not fit for the move to Kurnool in August 1866 has already been mentioned (p. 39). Following Day's secondment for fishery surveys in May 1868 (see p. 43), his life in India was henceforth extremely active, if it had not been before, but further evidence of poor health is his sick leave of February to September 1870 (recalled before his full ten months had expired – LPR.). A subsequent letter from the Rev. Stockdale (1 January 1874, Q 658) enquired after his health and implied that he had still been ill on his return from leave in 1872 and during 1873. In fact, all of Day's leaves in England were under sick certificate (1857–58, 1864–66, 1870), except for the dash to England in 1872 to get married. The entitlement for sick leave was a maximum of eighteen months at any one time (Crawford, 1914 : 415–417 ; also IACSL., July 1866), which Day overstepped by six months when permitted to postpone the trout experiment (Chipperfield, however, was granted twenty months in 1868 – MAL. for 1869). Leave on private affairs of two years was granted after ten years of service and again when a further ten years had been completed (exclusive of the leave) (IACSL., July 1866). Nowadays, few expatriates could be recruited on such terms and it is tempting to wonder if there was not some leniency in the granting of sick certificates in Day's time. The examination for the certificate was conducted by a board comprising Madras surgeons, largely from the Medical College and thus well known to Day. This is not to imply that Day malingered – the concern of his friends is genuine enough – but that the beneficial effects of a spell away from the tropics, whether for physical, cultural or spiritual reasons, were at that time all placed within the province of health.

Shortly after the Days arrived back in England in 1864, their son Francis Meredith was born (18 April 1864, FRMMF.). For a time they lived at Elm Lodge in East Sheen, London, but in October 1864 they moved to Andover Lodge in Cheltenham (BMNH.MS.Z. ; Q 654). Day does not seem to have had any previous links with Cheltenham and the choice may have been determined by Emma. The Rector of Alderton and of Great Washbourne (both about 13 km north of Cheltenham) was the Rev. Charles Covey (1795–1875), who was succeeded as Rector by his son Charles Rogers Covey (1829–1918) ; it is significant that the latter had a brother Edward Rogers Covey (1831–1904) who died at Mayfield and thus only a short distance from the Day family home at Hadlow Down (Venn, 1944 : 155, and Cheltenham Public Library, *in litt.*). Emma's father (Dr Edward Covey) and the Rev. Charles Covey (senior) were contemporaries and perhaps first cousins (their fathers being Charles and William respectively).

The lease on Andover Lodge was for a year only and in October 1865 the Days moved down to the Isle of Wight prior to returning to India early the following year. One address given by Day is Cumberland House, St Thomas Street, Ryde (in ink, dated 15 December 1865, Q 602). He also gave a second address, care of the Rev.

F. Stockdale, Havenstreet, Ryde (printed label, Q 651), which suggests more permanency than a mere visit to friends. Possibly Day met the Stockdales through the Coveys. The Rev. Frederick Stockdale (1827–1915) had been appointed Curate of St Peter's at Havenstreet three years earlier, having for the ten previous years been Curate at Alkborough in Lincolnshire (Venn, 1954 : 46), a part of the country with which Day had no connexions. There were, however, a number of Coveys living in the Southampton area (GRO.), including perhaps another uncle of Emma's. At all events, the friendship with the Stockdales was firm enough for the Days to leave their children there when they returned to India three months later and for Frederick and Kate Stockdale to be remembered by Day in his Will.

Probably written at about this time, but in an undated draft beginning merely 'My Dear Sir', Day apologized for not writing before about the scheme for creating cinchona plantations in the Nilgiri Hills,* 'but I was very hard pressed collecting trout ova for Madras and subsequently settling my children in the Isle of Wight' (Q 654). Fanny was then four years old and young Francis nearly two and they would have been eight and six by the time of Day's next visit to England in 1870 on sick leave. By then there was also Edith Mary to care for (born 30 October 1867 – FRMMF.), and possibly this is when Day first employed Fanny Julia Faithful as governess for the children (also mentioned in his Will). Certainly, there were European children at Kurnool (Q 659) and Chipperfield had his children in Madras (Q 659), but it was not uncommon for them to be left in England for reasons of health or schooling.† Emma's poor health may well have been another factor in deciding to leave the children behind, although the decision cannot have been easy.

Their five months at Ootacamund during the period of the trout and fish stocking experiments (mid-March to late August 1866) must have been a welcome alternative to the heat of Madras, for Ooty in the 1860's was fast gaining its reputation as the pleasantest hill station in the south. Denison was the first to moot an annual migration of Government to the Nilgiris and he usually managed six weeks or more at Ootacamund during the summer. In addition to his promotion of the trout scheme, he was also responsible for the systematic plantation of blue gum trees for fuel and the establishment of the Government cinchona plantations (Price, 1908 : 55). Denison's proposal for an official migration was turned down by the Secretary of State, but it was renewed by Lord Napier and in July 1870 the Governor and his retinue made their first official escape from a Madras August. At 2240 m above sea level, Ootacamund even at this date boasted English oaks, Scots pines, gorse bushes on the downs, weeping willows by the lake, and gardens full of roses, heliotrope, geraniums and violets, not to mention strawberries, raspberries, apples and

* Since the discovery in the 1630's of the medicinal properties of *Cinchona officinalis* or 'Jesuits' bark', various attempts had been made to cultivate the tree outside South America and in the early part of the nineteenth century the East India Company was urged to make the attempt. In 1859 the India Office commissioned Sir Clements Markham to collect *Cinchona* in the eastern Andes and to superintend its acclimatization in India. The Nilgiris, as also Ceylon and Darjeeling, were considered suitable sites and in the 1860's plantations were successfully established (Ramsbottom, 1931).

† For example, John Russell Reeves was 23 before he went out to Canton to join his father John Reeves, who had worked there for the East India Company since 1812 with only two periods of leave (Whitehead, 1970 : 195). Rudyard Kipling was another who was sent back at a young age to escape the fatal Indian heat and his feelings on this come out in the book *Baa, baa, Black Sheep*, a tragic story of two Anglo-Indian children separated from their parents.

pears. Lord Lytton asked his wife to 'imagine Hertfordshire lanes, Devonshire downs, Westmorland lakes and Scotch trout streams', while Edward Lear, who visited Ooty in 1874, found it 'so English as to be, I think, undrawable'. Panter-Downes (1967) recreates a vivid picture of Victorian Ooty and Price (1908) gives a detailed history of the town (with a brief mention of Day, p. 36). Both show old drawings and photographs and there are in the India Office Library twenty-six paintings by Captain George Bellasis, of which two (St Stephen's Church in 1851 and the Ootacamund Club in 1852) were reproduced by Archer (1969 : pls 15, 16).

During the latter part of their time in the Nilgiris, Emma Day kept a journal (Eg. 1). Much of it is devoted to anecdotes and newspaper cuttings, but for a month (18 July to 23 August 1866) Emma wrote a daily account of their life at Ootacamund. For the first four days they were at the Government bungalow at Kulhutty, where Day sampled the streams around Seegor and Billicul for fishes for the Ootacamund lake, but on the 21st they returned to the Fern Hill hotel in Ootacamund (where Denison had stayed the previous year – Price, 1908 : 55). They disliked it, however, and on the 23rd moved to Sylk's Hotel, 'a wretched little place . . . all very small cold & damp . . . can never make a servant hear when he is wanted & the food miserable. We are certainly as regards rooms attendants & food out of the frying pan into the fire' (p. 25). To their relief after three days they came upon Rose Cottage and rented it until the beginning of October (at Rs 70 a month). Emma spent a happy morning shopping for a dinner service, pots, pans and oddments and the next day exclaimed 'In our own house again ! What years it seems since we had one at Ryde [presumably Cumberland House] & our darlings were with us ! – yet in reality it is only five months & a half. Rose Cottage is a snug little place' (pp. 29, 30).

That the children had been left with the Stockdales is confirmed by many references in the journal (all the more poignant when it is remembered that Emma was never to see them again).

> *Saturday – July 28th.* Found the letters from the Madras Mail. One from Mrs Stockdale – the darlings are quite well – Baby [Francis Meredith] has just cut the first of his four last double teeth. (p. 38)
>
> *Monday – July 30th.* Began netted necktie for darling Fan . . . . (p. 40)
>
> *Wednesday – Augst 8th.* . . . . one from Mrs Stockdale & Dolly [Emma's sister]. The former gives a good account of the darlings, excepting that the heat has rather knocked up Fanny . . . Dolly & Minnie [another sister] have been to see them & think them greatly improved, especially Baby . . . Nurse has been giving trouble. (p. 48)
>
> *Thursday – Augst 9th.* Frank requested to send a P O to Mrs Stockdale of 25/ s five each for the darlings to buy toys with – & 15/ s for Nurse to buy herself some small token of our approbation if she is behaving herself properly & deserves it – this I have explained to Mrs Stockdale fully. (p. 49)

Emma found Ootacamund unpleasantly cold and wet. She complained 'we couldn't get warm' (p. 23), 'Very wet & cold – when will it be fine ? The damp

weather causes unnumerable fleas to appear everywhere in Ooty making people miserable night & day' (p. 42), 'Natives all looking most miserable' (p. 53) and 'My hands & feet quite frozen' (p. 54). She evidently was not strong and felt 'quite knocked up' after the shopping and moving into Rose Cottage. Yet she frequently rode out with her husband to collect fish or to stock them into the lake or rivers and she led a busy social life, paying frequent calls on her neighbours. She knew the vernacular names of the fishes that they were bringing up for stocking and she gave motherly care to those placed in tubs and awaiting transfer the next day. Her interest and pride in her husband's work is clear.

When the order to transfer to Kurnool arrived (22 August) Emma was in bed recovering from a bad cold and Day was out planting fish in the Pykara river. Emma read the order and in her journal confided her fears.

> . . . fancy that horrid cholera hole Kurnool – and to get there we must pass through all the cholera districts – it's a great doubt if we go, if we ever return alive – then how unfair to send away Frank . . . . All morning I was in despair. (p. 58)

When Day returned and heard the bad news he immediately set off to see the Commander-in-Chief, General Sir John Gaspard de Marchant 'to get him to intercede' and was granted a day's reprieve while the matter was looked into. He then had an interview with the Adjutant-General, Colonel James Primrose, and it was not a success:

> . . . he turned quite *green* like a chameleon when he saw him and was indignant at his having been to the Chief's. (p. 59)

At this rather tense point the journal suddenly breaks off and for the next twenty pages are retold various trivial anecdotes and snippets of army gossip, beneath which a source is given (usually 'Frank'). Finally, Emma returned to the Kurnool transfer for two pages (23 August). Day went to see Colonel Primrose again 'who received him very civilly . . . said it was very unfair . . . chatted very aimiably' and advised him to apply to the General's Secretary, Colonel John Fordyce. The last entry reads 'What passed in Frank's interview with the Governor, & the results are given in the volume labelled Kurnool – Madras Jan^{y} 1867' (p. 95). The latter is the Cheltenham volume Q 659 and its contents have been described already (see p. 37).

Emma was one of six children, of whom Fanny and Minnie were (unwittingly) to prove a headache for Day at the time of his transfer to Kurnool (see below, p. 101). In fact, the Covey family seems to have posed other difficulties for Day, chiefly in the interpretation and implementation of the will of Dr Edward Covey, Day's father-in-law. He died at his home in Basingstoke in 1861 (28 August – GRO.), while Day was at Cochin, at the comparatively young age of 56. No will is recorded (SH.) for this or the next six years, so perhaps he died intestate; this would have entailed an exact division of the estate between his children, which is where the difficulties arose. In an almost unreadable draft to one of the Executors, Day announced that he was coming up to London to see 'the vouchers respecting all the payments made on account of the estate of the late Mr C [E substituted in another hand] Covey at Basingstoke – together with the inventory of his personal property

at the time of death . . . I will bring with me the accounts I have already received but I must observe that they are by no means in a lucid state' (undated draft, post-October 1864 ?, Q 654). By December 1864 Day had engaged a Mr Blackmore as his solicitor, being dissatisfied with the way that this Executor was handling the division of the estate. To Blackmore, Day pointed out that, under the terms of the will, a copy of which he had only lately been able to obtain, 'everything should have been divided amongst his six children of whom my wife was one' and that until his return to England that year 'I have been unable to obtain one shilling on account of the [? Settlement]' (10 December 1864, Q 654). Day's chief complaint was with his wife's uncle* and he continued,

> Mr Covey [he wrote 'has attributed to me almost everything bad greed extortion & everything' but he deleted it] I do not comprehend misconstrues all my letters and creates mischief between [? myself] and my wife's family by attributing to me all sorts of things which I never inspired. It seems to me that he wished to allow all the income to be [? tied over] until the youngest was of age. . . . Now I have no wish to be exacting but I cannot admit the right of any executor to alter the details of a will – so kindly have made out what seems really to have accrued to us – even down to interest for monies not handed over.

Day's emphasis on the lack of principle of his opponent is characteristic : the final lines come more as the passing of sentence on the miscreant than as an expression of self-interest. He evidently received some criticism from one of the Covey children, inspired as Day saw it by the uncle, and he hastened to explain his position and to ask 'whether if you were in my position you would not do the same ?' (undated draft, ? 1865, Q 654). He went on to explain that

> Many observations of your uncle mark out the cursed [ill will – deleted] estrangement between you [? and us] many of which observations if not devoid of foundation are very distorted facts. Hardly had I set foot in England than he refused money to you and your brother [? saying that] he had advanced me so much when in fact I had not received one penny from him. I have never asked him to advance my [sic] one penny. I have only asked that he should carry out your father's will and not put his own construction upon it. . . .

These letters may be relevant to Day's expenses during the period, both in connection with the production of the *Fishes of Malabar* and the long stay in England. In the absence of patronage for his book from the Government of India, Day may well have been glad of the Covey inheritance. By this time two of his brothers had died (Edmund in 1853, Charles in 1860), but profits from the family estate

* Dr Edward Covey, Emma's father, had a brother Charles, but he cannot have been the 'wicked uncle' since he had died by 1844 (HCL., *in litt.*). Possibly this uncle was the Dr William Henry Covey of Uckfield mentioned earlier (p. 86). Yet another possibility is the Rev. Charles Covey of Alderton, who may have been a first cousin to Emma's father. If indeed Emma referred to him as 'uncle', then the woman who signed herself to Emma's daughter as 'Aunt H. Covey' (see p. 95) could well have been Hester Anne (d. 1914), daughter of the Rev. Charles (Cheltenham Public Library, *in litt.*). Covey relationships are puzzling because of the duplication of names like Charles, Edward and William, but there is a strong suggestion that the Coveys of Alderton, Basingstoke, Uckfield and Mayfield were all related.

probably served merely to keep his mother and two young sisters (Mary and Alice), with little to spare for the three remaining brothers (William, Francis and Henry) (see Appendix, p. 154). Hadlow House was sold at some time before 1867 (Appendix) and Day may have benefited from a share in the estate.

Day's return to India with the trout eggs in February–March 1866, his stay at Ootacamund (March–August), his posting to Kurnool (August–November) and his eventual transfer to Madras (November) have already been described. Probably in Madras the Cheltenham notebook Q 654 was compiled and it is to his wife Emma that we owe the preservation of many letters and drafts. Sometimes these are pasted in with a note that this was 'Frank's' reply to someone, but in the case of the Shaw correspondence Emma copied out whole letters into the book ; it was also her comment on the cutting about Furnell's skit (see p. 37). The notebooks Q 658 and Q 659 may also have been her work. In these and later notebooks there is evidence of both untidiness and method. Day's drafts speak of enormous haste, as also the promptness with which he answered letters ; the thoroughness with which he compiled not merely the Cheltenham scrapbooks of cuttings on salmonid fishes (Q 653, Q 656) but those now in the Linnean Society and the Zoological Society, hint rather at the patience of Emma and perhaps later of Fanny Laura.

Madras must surely have made a welcome change after three months in Kurnool, even though Day and his wife had not witnessed the worst cholera months. The Europeans in this period tended to form communities that largely turned in upon themselves for both interest and entertainment, and the community at Kurnool was a microcosm : according to Day's cholera report (Day, 1866) there were 13 men, 10 women and 13 children. By contrast, Madras was not only the capital of the Presidency, with its attendant heightening of social life, but was also a port where friends returning from furlough brought the kind of intimate news that could not be gleaned from the 'home' newspapers.

Of Day's life in Madras we have only the bare details. In addition to his duties as Medical Store Keeper, he was also Professor of Materia Medica at the Medical College (see p. 42), and he must almost immediately have begun his collecting and investigation of marine fishes in the area (e.g. Day, 1867b). Hitherto he had pursued ichthyology amongst administrators, but at the Medical College there were fellow surgeons who also devoted some of their leisure time to scientific or other studies. George Bidie, for example, wrote on the coffee borer, on native dyes, on practical pharmacy and on gold coins in the Madras Museum ; Michael Furnell published on cholera and the infective role of public water supplies, as well as a work entitled 'From Madras to Delhi and back via Bombay' ; another was William Cornish, who made a study of cholera and typhoid fever (Crawford, 1930). Day had already shown that his was not to be merely a time-serving career, but in Madras he had the stimulating company of others of the same stamp. James Shaw retired in February, but by now Day had almost certainly begun to win over others to his view that his fishery work was *not* the most trivial of medical duties but an important element in both health and economics. If not actually instigated by Lord Napier, the importation of gouramies from Mauritius and their transplanting

into the Ootacamund lake at least had his direct approval (see p. 42) and is perhaps an indication of how far Day had been able to influence official thinking in the year since his abrupt removal to Kurnool.

In July and August 1867 Day took some, if not all, of his annual sixty days' privilege leave at Ootacamund, partly to supervise the gouramy experiment but perhaps mainly to give Emma a rest from the heat of Madras. Since Edith Mary was born at the end of the October, Day may have left Emma at the cool hill station for the rest of the summer while he returned to Madras.

Of 1868 we know only the invitation in May to inspect the Madras fisheries and Day's journeys for the rest of that year, first to the north and then to the south of Madras (TIF.). Much of the following year was also spent away from Madras (March to October 1869, in Calcutta and then in Burma – see p. 43). It was during that year that Emma died, the culmination perhaps of some eleven years of struggle against the climate and diseases of southern India.* We have no record of the date or the place of her death (ER. and MB. searched), nor of what provision Day now made for the care of the three children, Fanny Laura (8), Francis Meredith (5) and Edith Mary (2). Day's application for sick leave on his return from the Andamans might perhaps have been a way of bringing Edith back to England. He was granted ten months' leave (see p. 45), but was recalled after five, leaving England at the end of September 1870. Presumably the three children remained in England and it may have been in this period, if not before, that they were looked after by the governess Fanny Julia Faithful.

The following year Day was appointed Inspector-General of Fisheries (July 1871) and he now divided his time between Calcutta and Simla. Two months later, however, he applied for home leave 'on private affairs', becoming by the January of 1872 'urgent private affairs' (see p. 46), apparently for the purpose of marrying the twenty-two-year-old Emily, youngest daughter of the Rev. Thomas Sheepshanks, then Vicar of St John's in Coventry (DNB.). An account of some of the Sheepshank family is given by Dorothy Erskine Muir (1955), Emily's niece, and other details can be culled from Venn (1953) and the DNB. Mrs Muir, daughter of Emily's brother John (later Bishop of Norwich), never knew Emily, but she speaks of the father as a scholarly man who, by tradition, taught the young George Eliot Latin and Greek ; Emily's mother was Cornish (from Falmouth, where Thomas Sheepshanks was headmaster of the Grammar School).†

The eldest of the Sheepshank girls was Katharine and it is she who provides the link between Day and the Coventry branch of the family, for she was Kate, wife of the Rev. Frederick Stockdale and guardian of the Day children on the Isle of

* In a letter to Day's daughter Edith Mary, her 'Aunt H. Covey' warns that she should expect to pay enormous premiums on a life policy 'as the family history is *not* good. Your dear Mother was for years in decline but she actually died of Cholera . . .' (30 June 1902, Eg. 7). In 1869 cholera was again on the increase, after subsiding for two years; over five hundred deaths occurred in Madras alone (Bellew, 1885 : 21).

† The Sheepshanks were a Yorkshire family of which Joseph (b. 1755), Emily's great-uncle, was a wealthy cloth manufacturer in Leeds. One of his sons, John, left an impressive collection of English paintings to the nation and another son, Richard, was the well-known Cambridge astronomer (and grandfather of Walter Sickert the painter); Richard's sister Anne left £10 000 for astronomical research in Cambridge. There was a strong ecclesiastical vein in the family and, according to Muir, four of Emily's sisters married clergymen.

Wight ; Dorothy Muir remembered her as 'really beautiful' (Muir, 1955 : 80, also portrait as a child). Evidently they had met in Coventry in about 1851 when Stockdale was for two years Curate of St John's, Katharine's father being Rector. In her Ootacamund journal, Emma Day mentions a visit by Katharine's sister Jessie to the Isle of Wight in August (Eg. 1 : 54), and some years later Frederick Stockdale also spoke of a visit by the Sheepshanks (letter to Day, 1 January 1874, Q 658). Day could thus have met Emily Sheepshanks as early as 1865 on the Isle of Wight and could have got to know her well during his leave of 1870 when almost certainly he must have spent time with the children at the Stockdales. In the Accession Register for fish specimens for May 1870 Day's address is given at 'Gt Russell St', but this may merely have been where he stayed on his visits to London.

Day married Emily Sheepshanks at Coventry on 13 April 1872 (DNB.). As already pointed out, Day was in Bombay on 6 March and 43 days later (18 April) he was about to set sail from England (also, letter to von Martens, 5 May, written on board ship – ZMB.MS.). In 1866 the trip to India had taken 36 days (4 February to 12 March, trout experiment), so that even though Day now left from Bombay and not Madras (and the Suez Canal was now open), he cannot have spent more than a fortnight or so in England.

It is most unfortunate that no documents appear to survive from this period and it is useless to speculate. The fact that his bride was some twenty years younger than Day, that their courtship must have been largely conducted by letter, and that Day's application for leave – and thus their decision to marry – was taken a year after Day had sailed back to India in September 1870 ; even a slight enlargement of these bare facts would throw much interesting light on Day's personality.

During his few weeks in England, Day had already begun to make plans to return home to write his book on Indian fishes (see p. 49). With his marriage and with his promotion to Surgeon-Major in February of that year, he perhaps looked forward to two or even three years in England, united with his children and living the kind of life that he had enjoyed in Cheltenham in 1864–65. To von Martens in Berlin he wrote that he proposed 'staying at Simla until October, then going through Assam and if possible returning to Europe next March by the Malabar coast' (5 May 1872, ZMB.MS.). Presumably, he and Emily set up home at Oakfield, Simla, although his papers of this period (Day, 1873, a–f) suggest that throughout 1872 he travelled extensively (Karachi, Bombay, Cochin, Madras, Calcutta) and can rarely have been settled for more than a month or two. Simla in this period is well described by Carey (1870) and by Buck (1904). Larger than Ooty, longer established and more sophisticated, its gay and at times irresponsible social life was probably not to Day's taste, but a young girl straight from England would surely have enjoyed it.

All promised well, but whatever hopes Day now cherished for a normal domestic life and a mother for his children, this was not to be, for within a year Emily had died (DNB.). Once again we have no record of the date (pencilled 'Mar 31' in Eg. 3 : 4) or the place and nothing can be deduced from Day's scientific papers that would indicate an unexpected break in his fishery travels. The Rev. Stockdale urged him to 'come and settle in England, if not at *once* at no distant period' ;

and he observed that it would be some years 'before Fanny [then 13] could be of any use to you as a housekeeper but I hope you will find someone and that many years of domestic happiness are yet before you, tho I can well imagine you feel unsettled at present' (1 January 1874, Q 658). In October 1873 Day's proposal to spend two years in England writing the *Fishes of India* had been forwarded to the Secretary of State for India. It was accepted and by May 1874 Day was once again in England (p. 50). He never returned to India.

The remaining years in England were extremely active and productive ones. Day was only 45 but he did not remarry and one has the impression that now he concentrated his whole attention on his work. Certainly, he had the problem of bringing up three small children, but the production of the *Fishes of India*, the speed with which the *British fishes* followed in its wake, the fish hatching experiments, his travels to other museums, and his numerous smaller projects and writings, cannot have been achieved without sacrifice of social and perhaps domestic activities.

After two years at Hartland House in Richmond, Day moved in February 1876 to his final home, Kenilworth House in Cheltenham. This is one of the largest in a row of large Victorian houses. Day's monthly salary had been reduced, for the period of special leave, from Rs 1500 to Rs 1000 (rupee then about 2 shillings) and there is reason to wonder whether Day had not inherited something from the family estate. His mother seems to have been alive still in 1876 (inferred from Day, A., 1928 : 5), but Hadlow House, the large family home, had been sold at some time before 1867 and perhaps much, if not all, of the two thousand acres that went with it (see footnote, p. 86). The shipping of his enormous collection home ; bottles and alcohol for its upkeep ; his frequent travels abroad ; his large house ; and the considerable size of his estate when he died (see below) ; these could hardly have been possible without some supplement to his salary.

Day's sister Mary Ann had, by 1875, become Mrs Beaumont and was living in Richmond, while his youngest sister, Alice Catharine, was living in the neighbourhood of Hadlow and was perhaps by then Mrs Anderson (see Appendix). His brothers Edmund and Charles had died young and his eldest brother William died in 1886, leaving only Henry, now retired from headmastership of Sedbergh Grammar School and living in West Brighton (Appendix). In 1882 Day's son Francis Meredith followed his uncle William into a legal career, being articled to a solicitor in Kingston on Thames for five years and striking out on his own in Wolverhampton the year before Day's death (Appendix). Fanny Laura and Edith Mary were presumably living at Kenilworth House.

In June 1888 Day's health began to fail. A visit to Weston-super-Mare and a stay with his friend Sir James Maitland in Scotland brought only temporary improvement and in December he decided to consult a specialist in London, 'who took a very serious view of his case' (17 July 1889, CE.). By January there was no hope and Day hardly expected to live over the month (see p. 108). With characteristic determination, he set about tidying the loose ends. The remaining fish specimens, the residue of his once huge collection, had already been cleared off the shelves and had been sent to the British Museum, of no further use to their collector. Reprints were sorted and a set of thirteen bound volumes, together with a set of Bloch's

works, went to the Linnean Society (Anon., 1891). A similar set, six volumes of reprints (which included his medical papers) went to the Zoological Society. His drawings of fishes, some of which dated back to the early days at Cochin and the start of the *Fishes of Malabar* (later bound in four volumes) were also sent to the Zoological Society (receipts for 88 and 146 'Original drawings' dated 26 February and 18 March, 1889 – Eg. 8). Four hundred crustaceans from India were boxed up and dispatched to the British Museum (see p. 114). His collection of Indian birds, nearly four hundred specimens, had been dispatched to Cambridge the previous November (see p. 148). His large collection of natural history books he kept with him, but most probably gave instructions for their disposal after his death. For seven months, until mid-July, he lingered on. His last act was to correct up the proofs of his first volume on fishes in the *Fauna of India*.

In his Will, drawn up on 19 February 1889, Day named three Executors, his daughter Fanny Laura, his son Francis Meredith, and the Cheltenham solicitor James Batten Winterbotham, each of whom was to receive £100 immediately. His large house and all that it contained went to his two daughters, who also received £5000 each (in trust) from the rest of the estate, together with a third of what remained after that ; the final third (also in trust) went to his son Francis. The whole estate was valued at just short of £40 000 and although his son was not neglected, his daughters were clearly favoured. Of small bequests, he left £100 to the following : his sisters Mary and Alice ; his sister-in-law Mrs Charles Covey (presumably wife to the brother of one of the Covey girls) ; his friend the Rev. Frederick Stockdale and his wife Kate ; Brisbane Neill ; and Edward John Waring* (who had married Day's half-sister Caroline – see Appendix). Fanny Julia Faithful, governess to his two daughters, received an annuity of £30 and the sum of £150. The house was to be maintained in its existing state for three months.

Day's son attended the funeral, but his two daughters were not listed among the chief mourners (17 July 1889, CE.). On 14 December the Cheltenham solicitors, Winterbotham & Gurney wrote to the Town Clerk to announce that Fanny and Edith wished to donate their father's natural history library to the Cheltenham Public Library. The conditions were that the books should be kept separate in Day's own bookcases and that, should the Library ever close, the gift must revert to its donors or their legal representatives (8 January 1890, CE.). Rarely has a naturalist's library been preserved for so long without additions or subtractions and its biographical importance is heightened by the presence of manuscript material and annotated works (see p. 9–11). Some of the books are of historic interest, as for example the plates for Forsskål's work (*Icones rerum naturalium*, 1776), which is signed *G. Cuvier* on the flysheet, stamped *G. Cuvier* on the title page, the latter then deleted and signed *A. Valenciennes* ; a cutting from the sale catalogue, however, shows that the copy was honestly bought and not purloined on a visit to the Paris Museum !

* Waring had first served in the Colonial Medical Service in Jamaica before joining the Indian Medical Service and taking part in the 2nd Burmese War (Crawford, 1914 ; 150). Possibly it was he who encouraged Day to go out to India. He retired in 1865, but the following year Emma noted in her journal (Eg. 1) that they had sent school fees to Cochin for Waring's children, which is curious.

At the time of the donation of the books, Day's daughters were said to be 'both of St Catherine's, Christchurch' and to be 'shortly leaving home for Christmas', so that transfer of the books was urged before 23 December (8 January 1890, CE.). Fanny Laura kept at least some of her father's books, which she later (1924) bequeathed to her brother or to his son (W.FLD.). She may have left Cheltenham for a while, but in 1892–94 she is shown by the street directory to have been at 10 Montpellier Grove ; the next record is Auburn, Hatherley Road in 1924 (W.FLD.) ; and finally Fairmount, Fairmount Road, where she died in 1942 (W.FLD.). There was a brief notice of her death in the *Gloucestershire Echo* (30 July 1942) and in the *Cheltenham Chronicle* (1 August 1942), but neither paper carried an obituary, perhaps because of war-time restrictions on space. Amongst other items relating to her father, she had a portrait in oils of Francis Day, which she bequeathed, together with the books and the family silver, to her brother Francis Meredith Day or to his son Harold Francis Day (W.FLD.) ; these are now with the Egerton family (descendants of Edith Mary Day).

After his father's death, Francis Meredith moved down from Wolverhampton, practised for a year in London and then moved to Fenny Stratford in Buckinghamshire. The following year he married Florence Edith, daughter of the deceased Thomas Holdom, a hotel keeper, and in 1893 gave up his practice as a solicitor ; possibly he was persuaded to help run the family business. For the next sixteen years he did not apply for a practising certificate and we have no record of his work during this period.* In 1908 he was living in London and he renewed his annual certificate (LSRSD.). However, in 1910 he became involved with William Rose and Frederick Ferdinando, an unscrupulous pair who posed as his clerks, ran an office in his name, and 'touted' for clients amongst prisoners awaiting trial ; the two were eventually imprisoned for fraud (*The Times*, 16 February 1911). Francis Meredith, who seems to have collected a weekly remittance of ten shillings from this business, could not entirely escape censure (and indeed it was with reference to him that the Clerkenwell Magistrate had made the original complaint to the Law Society). He did not suffer the fate of the other two offenders but was struck off the Roll by the Law Society for his part in the affair (*The Times*, 11 November 1911). One can only be saddened by this contrast with his father's successful career.

In 1893, four years after Day's death, his second daughter Edith Mary married John Campbell Egerton (FRMMF.), an accomplished portrait and landscape artist of Bath (exhibited Royal Academy, 1899) (newspaper cuttings in Eg. 5). The wedding took place at Chedington in Dorset and Francis Meredith was present (himself already married by then – Eg. 5). The ceremony was conducted by the Rector, none other than the Rev. Frederick Stockdale who, with his wife Kate, had looked after the Day children as far back as 1866 and probably until Day's final return from India in 1874. The Egertons had one child, Reginald Francis Egerton, and one grandchild, Reginald Ansell Day Egerton. It is through this branch of the family that certain of Day's books, manuscripts, photographs and other biographical material have most kindly been made available to us.

* However, his son Harold's birth certificate (11 June 1899) shows that they were then living at 63 Claverton Road, Pimlico, London.

In working through the available material a tentative picture emerges of how Day saw himself and how others saw him. Certainly his personality was such that it either excited strong reactions or – perhaps of equal significance – it led men like Brisbane Neill to adopt placatory tones, as if Day's strong will were better met by reasonableness than directly opposed or criticized.* In the end, Day usually had his way. His conflicts (and the manner in which his drafts are written) show the speed with which he took the offensive, as well as his care in presenting his own case as explicitly as possible. His sense of the rightness of his cause was sharp and unyielding, in defeat expressing itself by pithy comments against letters or cuttings in his scrapbooks. Thus, when official refusal of one of his claims concluded with the words 'The Government . . . are unable to allow his claim for Rupees 200 as the fee for an Examiner to the Madras University', Day added in ink at the bottom 'especially as he is not from the North of the Tweed' and 'No thanks for saving expenditure to Gov. by using my own horses' and more in that vein, ending with 'The Medical Dept. have much to be thankful for!' (17 July 1869, MGRD.Proc., Q 658). That Day took up the cause of officers in the Madras Medical Service and apparently went to the trouble of compiling a small pamphlet of their complaints, shows that his criticisms were not merely selfish ones ; he was evidently prepared to do more about it than merely to sit complaining in the Officers' Mess. His impulsiveness is also seen in the implied criticism made by Wilhelm Peters, to which Day replied : 'Every day shows me the truth of your observation that it is impossible to do fish in a hurry and to do them well' (Day to Peters, 28 November 1875, ZMB.MS.).

From 1865, however, the dominant theme was for official recognition of his ichthyological work, whether the trout experiment, patronage for the *Fishes of Malabar*, employment as Inspector of Fisheries, or financial support for the *Fishes of India*. Time and again, the worthiness of these projects is introduced into his disputes as if to provide unassailable justification for all his actions. Kurnool might be as unpleasant as Ootacamund was idyllic, but that was immaterial : it was the disruption of the fish planting experiment that really mattered and surely Lord Napier or Shaw or Chipperfield could appreciate *that*. In his long list of complaints against Günther sent to Owen in August 1874 (see p. 69), Day spoke of the *Fishes of India* as being 'not of personal but of Imperial importance' (BMNH.MS.G. **15**). Poor Günther, having achieved his British naturalization papers only six months before, now stood accused of obstructing nothing less than the solemn will of the Crown ! Not that Day was a hypocrite. His singleness of purpose, his energy, his willingness to throw himself whole-heartedly into the investigation of cholera, all argue strongly for his sincerity and belief in his motives.

There is one occasion, however, when he seems to have been guilty of a half-truth. From Kurnool he wrote to Shaw to say that his wife's two sisters 'were to have left

* Even in 1877 Neill was obliged to calm Day's over-hasty reactions. The cause was a popular book by Beavan (1877) on Indian freshwater fishes which so incensed Day by its inaccuracies that he scribbled pencilled comments on almost every page (Cheltenham copy, Q 139). Inserted in the book is a soothing letter from Neill saying that of course the book is dreadful but Day should resist 'smashing it up, as from a loose sheet of paper I suspect you propose to do'.

England this month to join us in Madras. We were just in time to [he wrote "stop them" but cancelled it] tell them to stay for a month longer.' (Day to Shaw, undated draft, Q 659.) The tone implied one more reason for Day to take up his Madras appointment. The reality was somewhat different, for he opposed the visit and had threatened to ship the unfortunate girls back to England on the next boat if they were unescorted. To a Mr Adams he wrote

> To my unutterable astonishment I heard this mail that the only reason Miss Minnie and Miss Fanny Covey had not been shipped to Madras to my address by the P & O Steamship of Oct. 4th was consequent on there being no berths.
>
> I cannot conceive of any father having a hand in such proceedings. Two young girls without chaperones . . . it must simply be iniquity did they thus come to me . . ..
>
> Please remember that I have a family of my own.
>
> I most distinctly warn all parties that should they be shipped here . . . to my address . . . without a chaperone I will send them back direct with the least possible delay.
>
> (Undated draft, Q 659)

The letter is quite uncompromising, with no fear for appearing callous towards his sisters-in-law (whatever his personal affections for them might have been). Again one sees Day's immediate pounce on the morality of the situation, as if to discount in advance any suggestion that the arrival of the two young girls might be a burden to him. If Day was as direct in his speech as he was in his letters, then one can well understand the friction that this caused, with Günther and with others.

How did Day see himself? One small clue appears in a rather cryptic letter written to Chipperfield during his stay at Kurnool.

> You will no doubt consider me an extraordinary individual but the exigencies of the service require all sorts of work from everybody and although I do not admire having been sent here it is perfectly clear I have a duty to perform and do it I will if possible.
>
> . . . for I do not like to look grumpy – though I may at times and I fear I always do speak my mind, still the good of the service is to me a great consideration. I know it is a mistake – I know everybody ought to look to himself only but I somehow cannot quite agree with that view of things . . ..
>
> (Undated draft, Q 654)

This letter was written at about the time that Day was composing an anonymous article entitled 'The Madras Medical Service in 1867' which purported to represent the complaints of the 'members of the Madras Medical Services, with but few exceptions' (ZSL. 1). Possibly Chipperfield was one of the latter and Day's letter replied to his objections. Day's authorship of the article seems assured by its inclusion in the bound volume of Day's medical papers which he had sent to the Zoological Society, together with reprints of his ichthyological papers, shortly before his death (see p. 12). Characteristic of Day also are such comments as,

> The most efficient Medical Officers will naturally, at all times, be selected to afford medical aid during violent epidemics and in unhealthy seasons, but no extra remuneration is given for such work . . . he must be a pecuniary loser, as only those who have thus suffered are able to comprehend.

The article was generally concerned with the decline in conditions of service for Madras medical officers following the post-Mutiny transfer of power from the Company to the Crown, in the face of assurances that advantages of pay, leave and prospects for promotion would be maintained under the Acts 21 and 22 Victoria Cap. CVI. It was noted that a Surgeon-Major ranked equal to a Lieutenant-Colonel yet his monthly pay was Rs 428 less, while a Surgeon received Rs 100 less than his equivalent, a Major ; such did not obtain in the British Army. Furthermore, the reorganization of the Army after the Mutiny resulted in fewer senior medical staff posts to which Day and his colleagues could aspire, and so on. The whole indictment is typical of the pains that Day took when he set out to 'speak his mind'.

For all his critical nature and frequent attacks on authority (the Police in Cochin, Lord Napier, the Madras Government, Colonel Man, and the leading ichthyologist of his time), Day saw himself as a conservative in politics. His failure 'to fathom the depths of the deep seated liberal views, with which we in India have lately been favoured from Europe' (see p. 39) was written in September 1866 at a time when Lord Derby's Conservative administration had succeeded that of Lord Russell ; Disraeli had been appointed leader of the House of Commons and it would be two years before Gladstone and the Liberals swept into power. To the English community in India, however, as to the 'settlers' in more recent times, quite mild overseas policies could well smack of Whiggery if they threatened the *status quo*. During the 1860's the structure of British rule in India was rapidly being overhauled, with paternalism giving way to a bureaucracy that many found discouraging to the personal initiative of former times. The executive activity of the District Officer was whittled away by the development of technical departments, while district administration was divided amongst a number of heads of departments whose orders came from provincial headquarters. At the same time, the post-Mutiny boom, on the crest of which the *ryots* had become established as a prosperous land-owning class, was fast receding and the Orissa and subsequent famines destroyed confidence in the new administration. Day would not have been alone in his criticisms and 'liberal' was as good a word as any with which to dub the wave of new legislation.

Day's most explicit references to politics occur in his letters to Peters regarding his hopes in 1880 of getting the post of Inspector of Fisheries in England (see p. 000). This time there was serious cause for alarm. In April, Gladstone and the Liberals were returned to office and, as Day put it, '. . . now all is change and I have to watch everyone so closely that I cannot get away [to Berlin]' (see p. 57). His insistence that politics would interfere with his chances for the appointment suggest that his views were strongly held and as strongly aired. This would not be inconsistent with the impression already gained from the various disputes in which he became involved. Something of the military man appears in a letter to Wilhelm Peters in

which he comments on the crisis with Russia in 1878. He was certain that England would go to war with Russia, 'single handed if necessary', adding that 'a few noisy triflers with Gladstone at their head would go in for peace at any price, but the nation will not have that policy any longer' (6 April 1878, ZMB.MS.).*

Day's opinion of Günther is perhaps not difficult to guess. The best statement of it is in his letter to Peters (14 October 1874, ZMB.MS.) in which he commiserates over the difficulties of seeing material at the British Museum. Day continued,

> Clever as he is and zealous as he no doubt is for the interests of science he is still more jealous of his own reputation and fearful that investigations might prove him to be wrong.
>
> It is to be regretted that so talented an individual is so sensitive, and that whilst dreading the criticism of his neighbours, he uses language respecting others he would not like employed to himself.

Another, but rather whimsical comment, comes from one of Day's Cheltenham scrapbooks (Q 658) into which he pasted a newspaper cutting (dated by himself June 1873).

> The Láhor paper says that the fact of Dr Hooker having rejected his work on the Flora of India has so affected Dr J. L. Stewart, Conservator of Forests in the Punjáb, that on Friday last a medical board at Láhor not only pronounced that his life was in danger, but that his reason had left him.

Against this Day wrote : 'Humph – I conclude Günther would reject my work on fishes had he the opportunity – I hope the result would not be identical FD / Death ensued the same month FD'.

Day kept no journal but from time to time he would confide his personal feelings in the margin or on a spare page of a book or reprint, as in the cutting above. On one occasion (flysheets of bound volume of reprints, Eg. 11) he made some extracts on Bleeker's method of illustration, taken from a letter from Hubrecht (see p. 112 below) and then turned to Günther.

> Günther was originally intended for the Church and studied Theology for 1 or 2 years. Schlegel 11/5/76.
>
> ? is this the reason why he is so dogmatic & overbearing ? – is this why he wishes to be considered infallible ? Does he wish [deleted, desire] to be an ichthyological Pope ? Is it not written in the book of Günther should I suppose be the Ultima Thule of ichthyological discussions according to Hr. Günther. F Day.

Curiously enough, Day did not annotate his own copies of the *Zoological Record* (Q 324), even in the case of the highly critical 1869 issue. However, his copy of Günther's *Catalogue* (Q 236) contains many annotations and pasted in descriptions

* In contrast to Day, Pieter Bleeker prided himself on being a liberal, albeit a moderate one, and for a time was editor of the *Tidschrift voor Nederlandsch Indië* (which was instrumental in liberalizing colonial politics); he also sat as a liberal on the town council of The Hague, to his amusement heavily defeating conservative opposition by virtue of the popularity of his cholera tonic – 'Bleeker's drink' (autobiography, English version in Lamme, 1973).

of specimens, although no pungent comments were found. These volumes are interleaved with figures and on the flysheet of the first volume Day wrote,

> Some rough notes also plates from
> Cuvier & Valenciennes Hist. Nat. Poissons
> Günther a few of his unpublished plates
> Day Fish India and Fish Great Britain
> F Day

On the reverse of the flysheet of the first volume Day wrote a note questioning the completeness of the *Catalogue*, since he himself had found in Cochin alone some 26 unrecorded species. This element of rivalry is even better expressed in the interleaved copy of the *Fishes of India* (Eg. 12). On the flysheet of the first volume he totalled 'New species in this volume' and gave two headings, 'Günther' and 'Day'. In the first volume Day scored 20 while Günther managed none ; in the second volume Day's total was 42 and Günther's only 3 ; in the third it was 68 against 7 ; and in the final volume the grand total was Day 197, Günther a paltry 16. In fact, this really showed how careful Günther had been, after the *Catopra* affair, to avoid describing new species from India (see, for example, the geographical analysis of Günther's papers in Gunther, R. T., 1930).

In July 1879 Günther remarried. In a letter to Peters, Day wrote : 'Günther has married a young wife – she is evidently brushing him up and hopes are expressed that his temper may improve.' (17 January 1880, ZMB.MS.) In May, however, Day had to report that 'Günther is of the same angelic temper and disposition he has ever been' (22 May 1880, ZMB.MS.). Day does not seem to have ever hit at Günther's nationality, but Gray once referred to him as a 'regular Prussian' (and Peters as a 'regular Bismark') in a letter to Alphonse Milne-Edwards (12 April 1874, MS. 2473, Bibl. Centr., Mus. Nat. d'Hist. Nat., Paris).

As with Day, it is interesting to see how Günther saw himself. One glimpse of the irrascible side to his nature comes in a letter that he wrote to Alfred Newton in 1869. Admittedly, this was at a time of intensive work, when any man's temper might become frayed, but it would be some years before this pressure abated and meanwhile this was one side at least of the Günther with which Day and others had to deal. Begging Newton to take over the editorship of the *Zoological Record*, Günther complained,

> . . . it worries me too much. I am not organised to take things calmly ; I feel easily annoyed, and a disappointment in the morning or an unpleasant letter which I have to write, like some of my last to yourself, sours my temper for the whole day. To a man who can take or make things more pleasantly, the editorship of the Record is an easy matter . . .

and again,

> . . . and if it is known that you, a more popular man than myself, are editor, I have but little doubt that the money will be granted, and you are afloat.
> (31 July 1869, cited by Gunther, 1975 : 293)

If Day was quick to take offence, Günther's manner seems to have been an ideal vehicle to give cause for it. A letter to Philip Sclater, for example, drew Sclater's comment 'I hope you do not reply to other correspondents so curtly as to me in your last letter – else I could easily understand you might offend them !' (6 February 1872, BMNH.MS.G. **16**). At the end of that year Sclater again complained. He started his letter 'Dear Günther' rather than his usual 'My Dear Günther' and he asked why Günther had written to him as 'Dear Sir'. He went on : 'It really is too absurd after all the time we have known one another.' (20 December 1872, BMNH. MS.G. **16**). In a draft reply, Günther made it clear that '. . . your conduct towards me has compelled me to assume [that form of address] . . . however great the divergence of our principles and motives . . it would not have caused [this rift] if your conduct at our meeting in the Gallery of the B.M. had not overstepped the bounds of forebearance' (undated, BMNH.MS.G. **16**). On that occasion Sclater had apparently commented that young Gerrard (son of Edward Gerrard, whom Günther highly valued for his skill as a preparer for skins and skeletons) was 'the appointed agent for the sale of dead animals . . .' but Sclater insisted that he had been misunderstood and could prove true what he had actually said (21 or 26 December 1872, BMNH.MS.G. **16**). Further exchanges occurred in August 1874, and almost total war broke out in April 1876 when Sclater perhaps flippantly suggested that Günther had in his rooms Wolf's painting of the gorilla and other pictures missing from the Zoologcal Society ; Günther was only pacified by soothing letters from Alfred Newton of Cambridge (BMNH.MS.G. **16**) which, in tone, recall the letters that Day received from Brisbane Neill during the quarrel over *Catopra* (see p. 29).

Exchanges of this kind, either by letter or published in newspapers or journals, are characteristic of the mid-Victorian era. Letters to *Nature* frequently contain asperities, or downright insults, which a modern editor would quickly remove as not being in the spirit of science. These Victorian exchanges, of which those between Günther and Day are such a perfect example, were in some measure the product of an overemphasis on honour, duty, principle and moral right. It was the determination to defend these, almost as a sacred duty, that made the quarrel between Günther and Day so impossible to resolve. Unlike Newton, Brisbane Neill, Chipperfield and others, Günther and Day invested their high moral purpose with such inflexible seriousness that they mistook for duty what was often trivial.

It should not be forgotten, however, that this was only one facet of their working lives. Both men had extremely busy and productive careers and neither could have achieved what he did had the quarrel been his sole preoccupation. Day's achievements have been described in some detail, but for Günther, who appears here almost wholly in relation to the quarrel, a very unbalanced picture emerges and one that does no justice to the great contributions that he made to ichthyology, to the British Museum, and to zoology as a whole. Some indication of the scope of his work comes from the biographical sketch and listing of his papers by his son (Gunther, 1930), but the best and most complete biographical work is that written by his grandson (Gunther, 1975). In addition, Günther's own account of the growth of

the Zoology Department (Günther, 1912) is an impressive testimony of his capabilities as both a research worker and an administrator.

However much Günther regarded Day as a nuisance and one who wasted his time, he nevertheless cannot have failed to realize the provocation that lay in his reviews and criticisms of Day's work. To his credit, Günther abruptly withdrew from the written battle after 1871, but even five years later the scars had not been forgotten. In April 1876, when Day was to read a paper to the Linnean Society on *The fishes of the Deccan* (Day, 1876c), the Secretary of the Society, James Murie, wrote urging Günther to attend. He pointed out that since

> you and Day have crossed swords and in the outside world by some the B.M. suffers, I should like you by your always manly conduct to show you are above personalities and pettiness. . . . I do not hesitate to say that your *role* for future probabilities is to assuage all asperities. Never mind birth-place you are ours. . . . I feel above all party, but am not blind to the future which some are preparing for, and why not you, who in many things show yourself liberal and broadspirited.
>
> (5 April 1876, BMNH.MS.G. 2)

Günther evidently refused, by way of a long letter and reference to the exchange in the *Proceedings* of the Zoological Society back in 1871. Murie 'carefully perused' these and concluded,

> I can see you have been deeply hurt, and bounce is a thing you do not relish.
>
> However, you ought to take a leaf out of your good and true friend, the glorious Newton [Alfred Newton]. Smoke your pipe and crack a joke at the hard saws and intended thumps of your opponent.
>
> In other words turn him off with humour, nothing can withstand that. But it is so hard to change one's nature. You are such a serious customer you ought to have been a parson. . . . You ought to feel like the big Newfoundland careless of the attacks of the small fry.
>
> (26 April 1876, BMNH.MS.G. 2)

Almost certainly Günther did not attend the meeting and if anything the estrangement between him and Day grew worse. In 1884 the Editor of *Nature* sent Günther an article by Day which contained criticisms of Günther's work. Günther replied that he was 'hardly in a position of advising you' because

> The writer has rendered himself notorious by the insane attacks he has made for years upon me. I have long ceased to take the least notice of them, and I should also decline the present, if you should publish it. However, I can put you in the way of convincing yourself that the article although written in unusually mild language contains gross misrepresentation of my views on those fishes [possibly *Antennarius*]. I send you an abstract of what I said about them in my 'Study of Fishes' 1880, p. 474, to which the writer refers. I send this for your own guidance, but not for publication, as I will have nothing more to do with the gentleman.
>
> (Undated draft, BMNH.MS.G. 2)

The 'big Newfoundland' was certainly remaining aloof from these attacks, although hardly with the grace and humour advocated by Murie. For his part, Day seems to have withdrawn the article, since his only notes to *Nature* of that year dealt with salmon and *Scopelus* and neither attacked Günther's work (Day, 1884a, b). In Günther's mind at least, the break was complete. His reactions to Day's salmonid book of three years later (1887) were carefully added to his manuscript on British fishes but he allowed himself no public comment. Both were now in their late fifties : reconciliation seemed impossible.

RECONCILIATION

Throughout this account of the quarrel between Day and Günther we have tried to be impartial, but the nature of the evidence and its uneven survival have often seemed to favour one or other of the participants. Had the issue at stake been a clear-cut one – for example, acceptance or rejection of Darwinian theories – then it would have been possible to make a scientific assessment of the disputes. As it is, taxonomy has made such strides that most frequently both are now seen to have been wrong and little emerges from marking up Day's contemporary successes against those of Günther. Day received support from men such as Pieter Bleeker, Thomas Jerdon, Wilhelm Peters and Richard Bliss, as well as sympathy from Brisbane Neill and others, but this does not necessarily strengthen his case. Neither man lacked loyal and admiring colleagues* and one must see the root of the matter in some incompatibility of their temperaments.

Both Day and Günther were ambitious, clever, dedicated, but in one respect deficient, for in a sense each lacked an element of what the other possessed. Günther was a professional, invested with all the authority of a famous institution and thus having an almost implicit standing in the scientific world. Day, on the other hand, was English and thus armed with a cultural and social acceptability that was independent of his scientific attainments. In the end, of course, they arrived at virtually the same positions, but what was planted in the mid-sixties had, by the mid-eighties, grown too tangled for any solution to be reached by reason alone. The only reconciliation possible was one of sentiment and in January 1889 the pretext arose : Day was dying of cancer.

Günther heard the news from R. Etheridge, Keeper of the Geological Department, who passed him a letter he had received from a Cheltenham friend. The latter spoke of the quarrel and of Day's regret, for 'it weighs on his mind . . . if Dr Günther could see his way to write Day a kind note Day would be glad' (29 December 1888, BMNH.MS.G. **15**). Günther saw the letter on 10 January and replied immediately. He first assured Day that his specimens for the British Museum had arrived safely and would be under his personal care. He then went on to try to resolve the conflict between them.

* In his obituaries, Day was referred to as 'so able and so amiable a man' (17 July 1889, CE.), while the *Chronicle* (20 July 1889) went so far as to say 'Specialists are as a rule not the most agreeable of human beings but Dr Day was one of those exceptions which prove the rule and attract for themselves a surrounding of friends and admirers'.

> Secondly, I take this opportunity of expressing my sincere desire that every feeling of animosity should cease between us. It has lasted much too long and although I have been silent for years, it is a matter of great regret to me [that] the feeling was in my heart. I should be happier, if you could let me know that you could reciprocate this wish. You may be more ready to accede to it when I tell you that you have misconstrued many of my actions in which I really had no intention of hurting you, and I never worked against you behind your back. Let us forget and forgive the past : and if I should be spared a little beyond the time allotted to you, you may be assured that no remembrance of the past will be allowed to influence my work and that your work will be treated by me as I wish mine to be treated by those who come after us.
>
> (10 January 1889, BMNH.MS.G. **15**)

Day replied equally promptly (11 January 1889, BMNH.MS.G. **15**). He first gave some extremely important information about his collections (see p. 152), but his principal concern was to make his peace.

> Your letter received last night afforded me intense pleasure. I much regret anything I may have done to vex or annoy you and I sincerely trust that all such subjects as may have occurred between us may be buried in oblivion. I trust to obey the call I have received without harbouring ill will to anyone and wish they would grant the same to me. May we both meet with that acceptance which can only bring peace at the last. . . .
>
> Should I live over the end of this month I will send you my last paper which is now in the printer's hands for the Cotteswold Club. . . .
>
> I have now only to wish you future success and to hope that in saying adieu such may not be more than a temporary separation until the time arrives that He in His infinite mercy allows us to enter into a heritage of peace and goodwill.
>
> Yours sincerely,
>
> Francis Day

In this manner, after twenty years of bitterness and dispute with Günther, Day tried at the end to fulfil the symbolism of the device on his letterhead : two outspread wings connected by clasped hands and above it the motto

Sic itur ad astra – thus travel to the stars

DRAWINGS AND ILLUSTRATIONS

In spite of Günther's earlier criticisms of Day's draughtsmanship for the *Fishes of Malabar* (see p. 28), Day's drawings show considerable talent in both line work and colour and while the copper engravings in that book are somewhat pedestrian, they are perfectly adequate (as Günther later admitted in his review). Day could not hope to attain Ford's mastery on the stone (nor had he the time to attempt it), but his drawings for the *Fishes of India* appear to have been in no way inferior to those drawn by Achilles, Suzini and Mintern, at least to judge from the finished engravings ; unfortunately the originals have not been found and were presumably dispensed with afterwards.

A talent for drawing seems to have been in the family. Day's sister Alice was capable of producing pleasing watercolours, one of which survives in the possession of Elizabeth Crossland of the New Inn at Hadlow Down, having been presented to her father by Alice Day ; it is entitled 'Old Yew Tree, Waghorn's Farm, Hadlow Down, Sussex, painted by Miss Day'. More than ordinary ability was shown, however, by Day's grandfather William Day (1764–1807), a somewhat neglected English watercolourist who 'at his best . . . was highly accomplished' (Williams, 1952 : 249). He was also a keen collector of rocks and minerals, some of his specimens having been purchased by James Sowerby (1757–1822) according to Macdonald (1974 : 388) and others going to the Central Library, Finchley Road, London (Day, A., 1928). His interest in geology was combined with that of art, producing a preoccupation with rocks and rock formations, notably in his sketches made during a tour through Derbyshire and the Lake District with John (William) Webber in the late 1780's (Egerton, 1970, who reproduced matching sketches by Webber and Day).*

With this artistic tradition behind him (and no doubt his grandfather's pictures hung on the walls of Hadlow House), Francis Day must surely have made sketches in India. Certainly the vignettes in the *Fishes of Malabar* suggest this, but no drawings have so far come to light.

The main collection of Day's drawings of Indian fishes is in the Zoological Society's library in London, where there are four bound volumes labelled 'Original drawings Fishes of India'. They contain 705 figures cut out and pasted onto the pages in systematic order (beginning sharks, rays, eels, cyprinids, clupeoids, percoids, etc., that is to say, the reverse of both Günther's arrangement in the *Catalogue* and Day's in the *Fishes of India*, but matching that used by Day in the *Fauna of British India*, therefore mounted by Day himself after about 1875). Above the head of each fish is a number written neatly in ink (presumably by Day), the numbers running consecutively through the volumes (1–160, 161–367, 368–600, 601–705). Other numbers in pencil may refer to earlier arrangements. The majority of the drawings are watercolours, but a few are uncoloured. Some are completed, most are fully coloured but lack outlines to scales, etc., and some are mere colour sketches evidently done in haste and on the spot ; in one or two the fish lies on a river bank with a landscape behind. Pencil notes are sometimes added, usually a vernacular name or locality but occasionally a reference to an author or some comment on the identification.

Below the head of each fish, in ink, is a signature. In most cases this is either 'F. Day' or, slightly more frequently, 'W. E.'. The latter refers to Sir Walter Elliot, formerly of the Madras Civil Service and a man of wide interests, including natural history (his wife Maria was half-sister to Philip Sclater's wife Jane). Although by 1854 a member of the Council of the Governor of Madras, he probably did not meet Day in India since he left on retirement in 1860 (DNB.). He had, however, received

* This was a critical period in the development of English landscape painting and William Day was not alone in his interest in the elements of landscape. Another who made the Derbyshire/Lake District tour (in 1783) was Philipe Jacques de Loutherbourg (1740–1812), who later toured Wales (1786), possibly with Thomas Gainsborough (Joppien, 1973). Since de Loutherbourg also knew Webber, drawing on his Cook voyage sketches and artifacts for the stage spectacle 'Omai' at Covent Garden, he may have known William Day too.

in 1865 Day's printed brochure urging the appointment of a naturalist for Madras (see above, p. 33) and it is possible that Day had met him when on leave, most likely in 1870 when he visited Scottish salmon rivers (CE.). According to a letter from Day to Peters (21 December 1874, ZMB.MS.), Day visited Elliot at his home Wolflee near Harwick in Scotland in December 1874 to look over his zoological collection and he came away with specimens of bats for Peters (some apparently Blyth types) and a promise of further mammalian material. In April the following year Day received the additional specimens, together with drawings and notes, and sent them to Peters (Day to Peters, 3 April 1875, ZMB.MS.). Elliot seems to have planned a large work on the Indian fauna on his retirement, but in a letter to Peters (March 1875, ZMB.MS.) he described how his hopes had been dashed. He had dispatched what was evidently a very large collection of Indian animals (including fish skins) to England in a ship containing a cargo of sugar. Hit by a cyclone, water had leaked into the hold and 'you may judge of the conditions in wh I received the contents . . . I abandoned all my long cherished plans. A few things rescued from the wreck I gave to others to utilize.' Some fish skins were saved and were given to a museum near Harwick, where they were seen by Day ; a few Elliot skins were also acquired by Day (see p. 150, footnote). With regard to Elliot's drawings, Day recorded in the *Fishes of India* (Preface : v) that the latter 'most liberally placed at my disposal the whole of his beautiful and accurate coloured illustrations of the Fishes of Madras and Waltair which he had had executed by native artists from fresh specimens. These comprise many hundred species, each with its native name attached, as well as Jerdon's identification, thus giving me the key to the fishes recorded in "Ichthyological Gleanings in Madras" . . .' (Jerdon's paper of 1851, in which 391 species were mentioned). The Zoological Society drawings marked 'W.E.' are presumably these drawings, although it is possible that Day merely copied them.

Other drawings in this Zoological Society collection are marked 'H. S. Thomas', 'Jerdon' and 'Ham. Buchanan'. The latter are certainly copies ; Day had examined Hamilton-Buchanan's drawings in the library of the Asiatic Society in Calcutta (Day, 1871a) and he expressly stated that he had been allowed to copy drawings from the second Hamilton-Buchanan collection which had just been returned to India after lying for many years at the India Office in London (Day, 1873c). The Thomas drawings are those of Henry Sullivan Thomas, Collector in South Canara in the 1870's. He had published a useful paper on fish culture (Thomas, 1870) and had provided Day with both specimens and biological notes, in recognition of which Day gave his name to new species of *Ambassis*, *Barbus* and *Scaphiodon*. Referring to the drawings, Day stated that Thomas 'has had a few excellent coloured figures of some fresh-water fishes executed for me by native artists' (*Fishes of India*, Preface : v). Day had further reason to be grateful to Thomas, for it was he who had sent the first specimen of trout 'bred in India in the wild' (loc. cit.), thus confounding Günther's prediction. Jerdon's drawings are also mentioned in the *Fishes of India*. He had had 'coloured figures made of large numbers' of fishes, presumably again by native artists. The fact that Elliot's drawings were the key to the fishes recorded in Jerdon's 'Gleanings' implies that Jerdon's own drawings either were

not then available to Day or were unsuitable. Elliot may even have drawn from Jerdon specimens. Thus, at least one specimen in Day's collection, stated to have come from Elliot's collection, is marked as a Jerdon fish and indicated 'see coloured figure' (see p. 150 below).

At the 1883 International Fisheries Exhibition, Day exhibited a collection of coloured drawings of fishes (Anon., 1884 : 155). These would almost certainly have been this Zoological Society series, or at least a part of it.

Eight further drawings by Day are in the India Office Library and were listed by Archer (1962 : 77–78) as NHD. 1317–24. All were drawn at Cochin, six being dated 1863. The first two are represented by photographs 'by Mr Griggs from original drawing by Dr F. Day' (W. Griggs Ltd of Hanover Street, Peckham, a well-known firm of fine-art engravers – Archer, 1969 : 3). The following subjects are shown :

1317 *Serranus lanceolatus* (pen and ink : photo)
1318 *Mesoprion rangifer* (pen and ink : photo)
1319 *Serranus sexfasciatus* (watercolour)
1320 *Eleotris butis* (watercolour)
1321 *Pseudobagrus chryseus* (watercolour)
1322 *Chaetodon pretextans* (watercolour)
1323 *Anabas scandens* (watercolour)
1324 *Etroplus meleagris* (pen and ink)

The first of these was used as Plate 1 in the *Fishes of Malabar*. Numbers 1319 and 1321 were also included but were redrawn ; cost perhaps deterred Day from using all of them.

The only other coloured drawings that have come to light are twelve spare figures from the *Fishes of Malabar* and a drawing of *Rasbora neilgherriensis*, all bound in with a set of reprints (Eg. 14 – see p. 14). Only two coloured copies of the *Fishes of Malabar* have been seen (Eg. 21), but Day listed thirty-one subscribers for coloured copies (Q 602) and perhaps fifty were made altogether ; the proof copy (Q 620) has six coloured plates.

As mentioned earlier (p. 55), Day told Peters that he intended having twenty coloured copies of the *Fishes of India* 'but this cannot be done for 3 or 4 years' (28 November 1875, ZMB.MS.). By 1878 he hoped 'before long to complete a coloured series of the Fishes of India, which I could hardly accomplish in a satisfactory manner were it not for Sir W. Elliot's assistance' (*Fishes of India*, Preface : vi). This points to the great importance of the Zoological Society drawings : this was to be the 'master' for his coloured sets. Although time and expense probably defeated the project, there was the added problem of procuring further drawings since some five hundred of the species illustrated in the *Fishes of India* are not represented in the collection.

The Zoological Society drawings are not well known to ichthyologists but are obviously of considerable value in identifying Day's fishes, as well as those of Thomas and Jerdon. Most were made from fresh material, as Day stated for his own in the Prefaces to the *Fishes of Malabar* and *Fishes of India*. In some cases they will have been made from the figured specimens now in Calcutta, although this can only

be deduced with certainty when Day possessed a single specimen. It is of interest to note that Bleeker, by contrast, examined rather few fresh specimens himself. Day was aware of this and on the flysheet of a volume of reprints (Eg. 11) he copied out part of a letter from Hubrecht (11 May 1876) in which it is stated that Bleeker's specimens 'were collected by medical and other officers – His colours were concocted in Holland from a few notes, recollections and observations on the preserved specimens.'

In addition to the Elliot and the Jerdon sets of drawings, Day also made use of another collection, that of Samuel Richard Tickell (*c.* 1810–75) (his career outlined by Low *et al.*, 1930 ; see also Anon., 1908). Tickell first took up appointment with the 31st Regiment of the Bengal Infantry, arriving in India in 1829. He rose from Assistant Commissioner at Chota Nagpur (1843–47) and Aracan (1847–55) to Deputy Commissioner of Tenasserim and Martaban Province at Amherst (1855), and finally Commissioner of Pegu (1863 to his retirement two years later). Like Day and many others of this period, Tickell found opportunity to study natural history and to exercise his talent for drawing. The result was a number of manuscript works on the mammals, birds, reptiles, amphibians, fishes and invertebrates, with very many of the species illustrated by excellent watercolours. These were bound in 14 volumes and were presented to the Zoological Society in 1875 :

1. *The fishes collected in the seas and freshwaters of British Burma from 1851–64. Vol. I*, 375 pages, with index of contents ; 319 species numbered, and one shark ; descriptions interspersed with watercolours, the whole neatly written as if prepared for publication.

2. *Mammals* (no title page), 214 pages, with index of 49 species ; descriptions and watercolours as above.

3. *Insects, reptiles, amphibians, arachnids and crustaceans* (no title page), 256 pages, no index ; no descriptions for the insects.

4–10. *Indian Ornithology by Col. S. R. Tickell H.M.Z.S. vols* 1–7 ; descriptions and watercolours, with 276 species figured and 488 species described, also 42 eggs.

11–12. *Tickell Aves* (no title pages or indexes) ; two volumes of descriptions and watercolours of some of the species in the preceding volumes.

13–14. *Tickell Aves MS. I and II* (no title pages or indexes) ; two volumes as above, 371 and 163 pages.

The bird drawings of the Tickell collection (as also those of Hodgson and C. F. Sharpe) were listed by Low *et al.* (1930), but the fishes have never been studied as a whole and have only rarely been mentioned (e.g. Hubbs, 1944 ; Myers, 1951). Day very briefly referred to the Tickell drawings in the Preface (p. v) to the *Fishes of India* (1878), which is curious if the collection was generally available at the Zoological Society from 1875. Tickell, in fact, seems latterly to have lived in Cheltenham and to have died there (cutting from ? *The Times*, 20 April 1875 – in Q 566), but it was not until the following year that Day moved to Kenilworth House and perhaps he never met Tickell, although it is surprising if he did not then know of the latter's work.

Day (1888) used the Tickell drawings and descriptions of Burmese fishes to propose new species or genera, as well as to place some of the names given by Tickell

in the synonymies of existing species. The following Tickell species are mentioned in the *Supplement* to the *Fishes of India* :

p. 785 *Apogon tickelli* MS. p. 215 (new species ; *A. poecilopterus* of Cantor a junior synonym)

p. 788 *Acanthurus tristis* MS. p. 297 (placed in the synonymy of *A. tennenti* Günther)

p. 791 *Malacacanthus* [sic] MS. p. 299 (placed in the synonymy of *Pseudochromis*)
Malacocanthus coccinicauda MS. p. 299 (placed as a variety of *Pseudochromis fuscus* ; designated type species of *Malacocanthus* by Myers, 1951)
Malacocanthus bicolor MS. p. 300 (placed as a variety of *Pseudochromis fuscus*)

p. 797 *Salarias cruentipinnis* MS. p. 313 (new species)

p. 798 *Salarias bicolor* MS. p. 316 (new species)

p. 802 *Platyglossus metager* MS. p. 322 (new species)

p. 804 *Geneiates* MS. p. 316 (placed in the synonymy of *Brotula* – see also Hubbs, 1944 : 163)
Geneiates feruginosus MS. p. 316 (tentatively placed in the synonymy of *Brotula multibarbata* Schlegel ; type species of *Geneiates* by monotypy and/or designation by Hubbs, 1944 or by Myers, 1951)

p. 805 *Duxordia* MS. p. 338 (placed in the synonymy of *Leiocassis*)
Duxordia fluviatilis MS. p. 338 (new species, placed in *Leiocassis*)

p. 807 *Acanthonotus* MS. p. 49 (new genus)
Acanthonotus argenteus MS. p. 49 (new species)
Abramis cunma MS. p. 53 (new species, placed in *Rohtee*)

The genus *Acanthonotus* and seven of the above species present no problems, being validly described and dating from the *Supplement* (with Day as author). However, those that appeared as junior synonyms are not available unless previously treated as available names (with date and authorship) and used either for a taxon or as a senior homonym prior to 1961 (*International Code for Zoological Nomenclature*, 1964 : Article 11d). Myers (1951) merely drew attention to these names as 'perhaps' good species and genera which had been missed in the *Zoological Record* and the various generic nomenclators. It seems unlikely that they have ever been used in the manner specified by the Code and they will probably remain unavailable, although a case could perhaps be made for the two 'varieties' of *Pseudochromis fuscus* (i.e. *coccinicauda* and *bicolor*).

Apart from actual or possible iconotypes, the Tickell collection is of interest both as another source for the identification of Day species and as a fine example of amateur work by a civil servant. It ranks with the Hardwicke, Hodgson and Sykes collections and deserves to be studied.

For the production of the plates for his two major works on Indian fishes, Day used two methods. For the *Fishes of Malabar* he made his own copper plates, having toyed with the idea of photolithography but giving it up on account of the expense (see p. 26). Although great strides had been made with woodcuts in the latter part of the eighteenth century by men like Thomas Bewick, they could not

rival copper or steel engraving for the kind of detail required in drawing fishes. Thus, Day's initial choice of woodcuts for the *Fishes of India* was based purely on the expense, but seeing the possibility of raising the money he soon settled on lithography, a method that achieved in the plates of Ford 'the acme of accuracy and beauty of fish illustration . . . in England in the 1860s . . .' (Myers, 1971 : 13). There is no evidence that Day was tempted to try chromolithography, in spite of Bleeker's use of it for the *Atlas* plates and his probable championship of the method when he discussed the illustration of the *Fishes of India* with Day. In fact, there was nothing at that time to rival hand-coloured lithography. Chromolithography produced somewhat muted tones and while this is not unattractive in an Arundel Society print of the period, it cannot do justice to the vivid colours of many tropical reef fishes.

DAY'S COLLECTIONS

During the early part of his career in India, and especially at the time that he was writing the *Land of the Permauls* in Cochin, Day's interests covered many aspects of natural history. His earliest collection seems to have been of birds, but he later collected insects, crustaceans, reptiles and mammals in addition to his principal concern, fishes. Some of these collections were made for others, but he kept a large collection of crustaceans and another of birds until a few months before his death.

Evidence of one insect collection (he may have made others) comes from a manuscript list of 81 Lepidoptera 'collected in the Neilgherries by F. Day Esq.' which he pasted into his copy of the paper on fishes from the Nilgiris (Day, 1867a – at p. 24 in his bound volume of reprints, Eg. 14). The specimens evidently went to the India Office Museum, then at Fife House in Whitehall, since the list is signed by the curator 'F. Moore London July 1868'. Day's interest in crustaceans is shown by a notebook that he began (but soon abandoned) on the British brachyurans (Q 649). In a letter to Eduard von Martens in Berlin he said that his collection of crustaceans, as also reptiles, was large 'but I do not touch these departments' (5 May 1872, ZMB.MS.). To Peters he wrote,

> As regards my reptiles and crustaceans they do not comprise anything like the quantity I collected, poor Stoliczka used to have all of the former (reptiles etc) except such as I included in my fish collection – He returned me many named and latterly I kept all to let him see in Europe.
>
> As for crustaceans I collected for Mr Wood Mason [Assistant Curator at the Indian Museum in Calcutta] who promised to describe them, but did not, however I think I retained duplicates of most.
>
> (27 September 1874, ZMB.MS.)

He then offered this collection to Peters and von Martens provided that they would identify it and return duplicates. This did not include his personal and perhaps working collection, some four hundred Indian crustaceans, which were eventually given to the British Museum in 1889 (BMNH.1889.6.17.1–401 ; 8 further donations, 61 specimens in all and mostly British, are also listed). After the

Great Fisheries Exhibition of 1883, Day wrote to Edward Meirs at the British Museum offering the 'stalk-eyed crustacea' from the Indian Section (3 October 1883, BMNH.MS. Crustacea Section). Meirs consulted Günther and noted on the letter that Günther would not accept them if it meant that Meirs had to 'work them out'. Possibly these were the specimens that were eventually donated in 1889.

A further reference to Day's reptile collection appears in another letter to Peters (17 January 1880, ZMB.MS.) in which he said that 'every specimen of reptile I had went to Stoliczka' (Ferdinand Stoliczka, who collected on the Second Yarkand Mission and whose fishes were subsequently described by Day, 1878).

Of mammals, Day certainly collected bats and in his letter to Martens cited above he said that he believed he had already sent to Peters species from several localities in India and Burma.

The three collections of birds (188 specimens) that Day presented to the museum at East India House in 1857–58 have already been mentioned (p. 22). When the museum's Leadenhall premises were abandoned, a large number of specimens were distributed, but Day's birds were apparently retained since they were eventually returned to him with the final closing of the museum in 1879 (see below, p. 120). They may, therefore, have been included in the collection of 375 skins that Day donated in 1889 to Cambridge (see p. 148). Day also gave bird specimens to Berlin, since in a letter to Peters he offered a *Gallus banskii* and 'Any other birds you may desire, if I have duplicates' (14 October 1874, ZMB.MS.).

The bulk of Day' collection was, of course, fishes. His own estimate of the number of specimens, made in October 1873 when he had shipped the collection to England, was 'about 12 000 specimens in spirit, besides skins' (Day, 1873e : 747). An indication of the final size of Day's collection comes from the preface to the *Fishes of India*, where he states that, of the 1340 species described, 1185 were in his own collection. By comparison, it can be noted that in 1858, when Günther began his *Catalogue*, the entire British Museum collection, which had been accumulating since the middle of the eighteeneth century, numbered only about 16 000 specimens, although this total had risen to 29 275 or 5177 species by 1870 when the eighth volume of the *Catalogue* was published (*Catalogue*, Preface : vii). Bleeker's collection, however, was even larger than Day's and was perhaps the biggest personal collection of fishes ever made by a working ichthyologist. Prior to his departure for the Netherlands in 1860, Bleeker had already sent large collections to eleven European museums, Leiden being the most favoured and receiving over 12 000 fishes (Lamme, 1973 : 30). After his death, his vast collection was auctioned and in the *Catalogue* Hubrecht (1879) listed some 2297 species comprising about 26 500 specimens ; even this did not represent the full total since Bleeker had given 1786 species to the British Museum (Whitehead *et al.*, 1966 : 9) as well as some to Day and perhaps to others. Day (*Fishes of India*, Preface, p. iv) gave Bleeker's collection as 2348 species and about 30 000 specimens.

The Bleeker and the Day collections were amongst the last of the really large private collections of fishes. Few could afford the expense of jars and alcohol and by the end of the century the days of the amateur fish taxonomist were almost over. The great private museums of the eighteenth century were overtaken in

Day's lifetime by national institutions, either newly founded, like the museums in Calcutta and Sydney, or given a new lease of life by the energetic social and economic developments of the Victorian era. Like Bleeker, Day recognized the importance of these institutions and already in 1872 he envisaged dividing his duplicates amongst the major European museums 'provided I am permitted free access to their specimens and if they have duplicates of Indian species which are neither in my collection nor that of the British Museum being permitted to exchange' (Day to von Martens, 5 May 1872, ZMB.MS.). In fact, Day donated or sold parts of his collection to twelve institutions and five fractions of the British Museum material were redistributed after his death. Fourteen museums that received Day's Indian fishes are listed here chronologically and will be discussed in detail.

1865	India Museum, London	(p. 116)	*c.* 100 fishes (7 types)
1864–70	British Museum, London	(p. 124)	416 fishes (18 lots)
1866–70	Govt Central Museum, Madras	(p. 129)	'a large number'
1872	Museum of Comparative Zoology, Harvard	(p. 130)	*c.* 100 fishes
1875	India Museum, London	(p. 116)	? 100 fishes
1866–79	Indian Museum, Calcutta	(p. 131)	3973 fishes
1874–82	Zoologisches Museum, Berlin	(p. 136)	328 fishes (291 spp.).
1875–80	Rijksmuseum, Leiden	(p. 138)	*c.* 418 fishes (412 spp.)
1875–76	Paris Museum	(p. 142)	48 fishes (48 spp.)
1880–84	Florence Museum	(p. 143)	333 fishes (171 spp.)
1880	Genoa Museum	(p. 144)	21 fishes (21 spp.)
1883	Australian Museum, Sydney	(p. 144)	*c.* 2000 fishes (917 spp.)
1886–87	Naturhistorisches Museum, Vienna	(p. 146)	*c.* 1050 fishes (865 spp.)
1888–89	British Museum (Natural History), London	(p. 148)	5379 fishes
1889	Zoological Institute, Leningrad (ex BMNH)	(p. 151)	558 fishes (284 spp.)
1899	Field Museum of Natural History, Chicago (ex BMNH.)	(p. 151)	452 fishes

a. *India Museum, London*, 1865–75

Day's earliest donations of natural history specimens (three collections of bird skins in 1857–58) were to the museum of the Hon. East India Company in London. The East India Museum or 'Cabinet of Natural and Artificial Products', later known merely as the India Museum, owed its existence to the numerous collections made by private individuals and by civil and military members of the Company in the latter part of the eighteenth century, for which the Court of Directors founded a public repository in 1701 at East India House in Leadenhall Street (contemporary engraving of the façade reproduced by Archer, 1962 : pl. 25). Here could be found substantial collections of plants, animals and their products, as well as drawings, made by such men as Major General Hardwicke, Sir Stamford Raffles, Francis Hamilton-Buchanan, Theodor Cantor, Brian Hodgson, William Griffith, Sir John Richardson, Thomas Horsfield, William Sykes and John McClelland. In 1819, Thomas Horsfield (1773–1859) was appointed the first Keeper of the collections, a post that he occupied until his death. Horsfield produced a number of catalogues, some of which were published (e.g. birds and mammals, 1841 ; mammals, 1857), while others remained as manuscripts (e.g. fishes, see below). From 1848, Frederic Moore (1830–1907) served as Assistant in the Museum ; the two-volume catalogue

of birds (Horsfield & Moore, 1854, 1858) was in fact his work (Sharpe, 1906 : 39). Cowan (1975) has given useful biographical summaries with references, for both Horsfield and Moore.

In 1858, with the transfer of the Company's powers and material possessions to the Crown, the Library and its associated Museum came under the administration of the newly created Department of State, the India Office (see history of Library by Arberry, 1938). The Leadenhall premises were abandoned, but a temporary museum was continued at Fife House in Whitehall, where the natural history collections were exhibited. In 1869, however, with the establishment of the new India Office in Charles Street (now King Charles Street), it was found that there was no room to exhibit the natural history collections. These were accordingly stored in boxes on the premises, more or less inaccessibly in the cellars (Sclater, 1875), or on 'the topmost floor of one of the highest buildings in London' (Anon., 1875 : 252), much to the indignation of Sclater, Alfred Newton, Alfred Wallace and others who wanted to work on the material (letters to *Nature*, **7** : 481, 457–458 ; *Nature*, **8** : 5). Four years earlier, Sclater had written to *The Times* (16 March 1871) citing an actual occasion when he had attempted to examine a possible type specimen, only to be told that the boxes were too tightly stacked to be opened. He wrote again (*The Times*, 14 June 1873) and this may have triggered a scathing report (*The Oriental*, **1** : 314–322) which claimed that the natural history collections had 'not been touched for years . . . they are all lying stuffed away in packing cases, in the Military Storehouses in the Belvedere Road'. In fact, the India Office Museum had disposed of a considerable number of specimens during this period, the zoological material being presented to the British Museum in 1860 (about fourteen hundred fishes, BMNH.1860.3.19.1–1471 ; over five hundred birds, BMNH.1860.4.16.1–584 ; as well as a number of mammals and several thousand insects).

However, the protests of men like Sclater may have had their effect, for by June 1874 the India Office was negotiating with the Commissioners of the 1851 Exhibition site at South Kensington for the lease of the eastern galleries in which a new India Museum could be set up (Minute Paper No. 400, 4 June 1874, SCHC.). News of the move was announced in November (e.g. report in *Nature*, **11** : 77), the collections were packed up in December, and by mid-January 1875 they were ready to be transferred to the new Museum (Minute Papers Nos 303 and 369, SCHC.). John Forbes Watson (1827–92), at that time Reporter on the Products of India as well as Keeper of the India Museum, was placed in charge of the new Museum (designated Director in 1878), and George Birdwood (1832–1917) was Curator ; Frederic Moore, in spite of twenty-five years with the India Office Museum, remained merely an Assistant Curator (in charge of the zoological collections), together with M. C. Cooke (vegetable products) and Lieut. J. R. Royle (son of Forbes Royle the botanist) ; another who was employed by the Museum was Fred. C. Moore, presumably Frederic Moore's son and the man who later illustrated many books and papers on Lepidoptera, particularly those by Moore senior (Cowan, 1975 : 275).

On 1 June 1875 the Museum was formally opened, with fishes and reptiles displayed in Room 4 (report in *Nature*, **12** : 193), but its life was short. Watson had submitted a proposal to the Government for the establishment of a permanent India

Museum and Library, but to no avail. Lease of the South Kensington site was not renewed after three years and in 1879 the Museum was closed down and the material finally dispersed. Günther sat on a committee dealing with the distribution of the India Museum specimens, of which all the zoological material was offered to the British Museum on Günther's refusal to let Calcutta have first choice (BMNH.MS. Doc., **2** : 171, 176, 186). He later commented : 'Although the majority of specimens selected have greatly suffered from the length of time during which they were kept under very unfavourable conditions, their number and scientific value far exceeds Dr Günther's expectations.' (BMNH.MS.Doc., **2** : 257.) Günther then wrote to John Anderson at the Indian Museum in Calcutta offering duplicates, which were accepted, and others were sent to the Indian Institute in Oxford, the South Kensington Museum, the Dublin Museum, and the museums at Scarborough and Maidstone (BMNH.MS.Doc., **2** : 290, 339 ; also BMNH.MS.Misc., **1** : 5). The British Museum received nearly five thousand birds (112 being types *fide* Sharpe, 1906 : 262), nearly seven hundred mammals (numerous types *fide* Thomas, 1906 : 40), but only 131 fishes (BMNH.1880.2.2.1–131).

On the final closure of the Museum it was decided to give to the British Museum a quantity of documents relating to the natural history collections. These are now bound in four volumes entitled :

Documents of the Indian Museum (BMNH.Zool.Libr. 89 q 1 – hereafter cited as *Documents*)
Vol. 1 (thicker of the two), 335 ff., chiefly relating to birds and mammals
Vol. 2 (thinner volume), 125 ff., chiefly reptiles, fishes and invertebrates
Indian Museum Lists of Collectors (BMNH.Zool.Libr. 89 f 1 – hereafter cited as *Lists*)
Vol. 1 (thicker volume), 376 ff., including lists of donations by Horsfield, Raffles, Sykes, Reeves, McClelland, Cantor and the Asiatic Society (sent by Blyth)
Vol. 2 (thinner volume), 221 ff., including lists of donations by Hodgson, Moore, Richardson and Gould.

These documents are not very carefully collated, but with patience a great deal can be learnt of the many valuable collections sent to the India Museum between 1830 and 1879. The India Office (and its pre-1858 counterpart) also kept *Day Books* in which were entered new acquisitions. These chiefly related to books, but in the early years a note was made of the arrival of specimens.

None of Day's collections is mentioned in the *Day Books*, but five are referred to in the *Documents*. The first, of birds, is given as 'May 25th 1857 Presented by Dr Day A series of 71 specimens of birds from Burmah, Nilgiris & Mysore. See Museum Nat. Hist. Catal. No 81' (*Documents*, **1** : 220). On 8 January 1858 and in March 1858 a further 27 and 90 birds were presented, each with a reference 'See list No 81' (same page as before). The list referred to has not been found.

The fourth collection was that of fishes given in 1865. In his Preface to the *Fishes of Malabar* (p. vi), Day stated that he had given specimens of 6 out of 19 listed new species, together with a specimen of *Engraulis auratus* Day, to the East India

Museum, and also 'upwards of one hundred species which were personally collected in Cochin, but of which I possess duplicate specimens'. In a letter to Moore early in 1865, Day had referred to a part of this donation as 'duplicate acanthopterygians' which the Museum could have 'as soon as my paper is read' (2 January 1865, ZSL., Gladstone Autographs). This collection is important for the types that it contained, but unfortunately the various documents are not consecutive and there is some doubt whether or not 'A series of fish (skins) about 100 Presented by Dr F. Day. (see list in General Registry)' truly refers to this donation. The information was evidently written much later since it is on paper headed 'India Museum South Kensington', the latter being deleted and 'Feb. 1865' added in ink (*Documents*, **2** : 94). Four pages later is a folio entitled 'List of Fish 1879 F. Moore' and immediately after are five numbered folios in Day's hand giving a list of fishes, arranged by numbered families. Approximately 120 species are given, with locality and often '(Spirit)' or '(bottle)'. Some 34 species are marked 'Cochin Day', 14 are labelled 'Malabar', but others are given as 'Madras', 'Madras Mus.', 'Penang Cantor' or 'Schl' (Schlagintweit). To this list have been added in pencil 18 species marked 'Paris Exh. 1878' and a further 28 (also in pencil and perhaps by Moore) make up a separate list ; there were also 7 plaster casts. Preceding each name is a number (1–7, perhaps being box or jar numbers) and following each is another set of numbers whose significance is difficult to interpret (4.1, 6.1, 2.1, 4.2, 2.$\frac{7}{8}$).

The list itself is undated and there can be no certainty that it refers to the donation of 1865 (there are no other lists of Day material, however). A note in pencil at the top of the fourth page states : 'The following families are from Day's Malabar Fishes', but this could have been added subsequently and may perhaps only refer to the 28 species names in pencil. Of the 19 new species listed by Day in the Preface to the *Fishes of Malabar*, there are seven which appear in ink in this list and may thus have been his types :

Barilius bakeri (Spirit) Travancore Day
Puntius paral [i.e. *parrah*] Cochin Day
Puntius denisoni (Bottle) Cochin Day
Garra malabarica (Spirit) Malwa Schl[agintweit]
Hara malabarica [no data]
Engraulis auratus (Spirit) Malabar Day
Mastacembelus [i.e. perhaps *M. guentheri*]

In the original description of *Garra malabarica*, however, there is no mention of Malwa as a locality.

Of Day's donation of butterflies from the Nilgiris, for which Moore had sent to Day a list of identifications (see above, p. 114), no mention has been found in either the *Documents* or the *Lists*.

In a description of the India Museum shortly after its opening at South Kensington in 1875 (*Nature*, **12** : 192–193), the paucity of reptiles and fishes was remarked, but with the promise that 'this section will shortly be enriched by the extensive and valuable collections formed by the Inspector-General of Indian Fisheries'. In fact, no new collections of fishes came to the India Museum from Day. In May 1874 the

India Office Museum had received a small collection, recorded as '1874 May 21 Dr Day – various samples of stuffed fish from Cochin, &c.' (*Documents*, **1** : 104), which was possibly the material referred to in the list above. However, what Day desperately wanted the new India Museum to buy was his type collection in order to pay for the extra plates for the *Fishes of India* (see p. 53 above). In perhaps October 1874 he offered to sell this collection, numbering 4000 specimens (Minute Paper of 24 November 1874, not found but inferred from Minute Paper No. 910, 24 December 1875, SCHC., in which the cost to 'set them up' was estimated at £200). Apparently, this sale was agreed, but the following year it was decided merely to accept the specimens on loan (Resolution of Council, 22 March 1875 ; inferred from footnotes on Minute Paper No. 910). The reason for this change of heart lay with the initially divided opinion on the role of the India Museum. Certain members of the Council of India, and in particular Sir Erksine Perry, took the view that the cost of the Museum could only be charged to Indian Revenues if the exhibitions were restricted to those objects that were raw materials or manufactured products of practical interest to the people of India ; existing natural history specimens might be accepted for temporary display but would ultimately be disposed of (a view accepted by Council in a Resolution of 22 January 1875 ; see also Perry's printed statement, item 375, SCHC.). It must have been at this point that Day entered into negotiations with Ford for the purchase of his type collection, leading eventually to the sale of these specimens to the Calcutta Museum (see p. 53 above). Meanwhile, he offered a second and smaller collection to the India Museum, this time a mere 800 species, 'limiting his selection to such as are used as Food in different parts of India' (Minute Paper No. 910). It is not clear whether these were offered as a loan, a gift or for sale, but when Forbes Watson requested £160 for bottles and alcohol, even this was turned down by the Council (16 January 1876, footnote to Minute Paper No. 910). It was presumably this collection that was exhibited at the 1883 International Exhibition and eventually sold to the Australian Museum in Sydney (see p. 144 below).

With the closing of the India Museum in 1879, some of the specimens were returned to their donors. Thus, against the lists of bird skins donated by Day (*Documents*, **1** : 220) is a pencilled note 'The above specimens were returned to Dr Day by Official Order F. Moore'. These would almost certainly be the bird skins that Day subsequently sent to Cambridge (see above, p. 148). Against the list of fish specimens given by Day (*Documents*, **2** : 98) there is a similar pencilled note indicating return of the material in December 1879. The circumstances of this return are, inevitably, bound up with Day's quarrel with Günther, for Day had been horrified to see from the newspaper that the India Museum intended to make over its zoological specimens to the British Museum. In a letter to the India Office he pointed out that 'during most of the period I have been compiling "The Fishes of India" for the Indian Government I have only experienced obstruction from the British Museum to examine specimens' (letter of 14 July 1879, attached to Minute Paper No. 4817, SCHC.). The matter was submitted for consideration, but Day wrote again in November, this time to Sir Louis Mallet the Under-Secretary for State, requesting the return of 'the collection which I presented to the Museum

of the E.I. Co & fish which I also sent to the same institution in 1864–65' (letter of 11 November 1879, attached to Memorandum No. 5258, SCHC.). Birdwood apparently wrote 'a private and confidential note' asking if Day had any written evidence that conditions of any sort had been attached to the donation, and in reply received 'Dr Day's characteristic letter' of 19 November which began 'Of course if you as an Official of the India Office decline to return to me my collections of fish and birds deposited in the India Museum intending to make them a present elsewhere, all I can do is to protest against such a course, etc. . . .' (Memorandum No. 5258 and attached letters, SCHC.). In the end, of course, Day got his way. Thus, the possible syntypes of the Malabar species will have been amongst the material returned to him. Since he was still dispersing his collections (Leiden until 1882, Sydney 1883, Florence 1880–84, Vienna 1886), there can be no certainty that these syntypes came to the British Museum with Day's final donation of 1889. However, it has been argued that, because of its locality (Malabar), one of the two specimens of *Engraulis auratus* in the British Museum (Natural History) must be the specimen formerly in the India Museum (Talwar & Whitehead, 1971 : 78). Possibly a similar case could be made for some of the other syntypes.

The two major dispersals of India Museum material, in 1859–61 and 1879–80, were not the only ones, however. The lists in the *Documents* show that numerous small collections were given away between 1830 and the closing of the Leadenhall premises after 1858. Sharpe (1906 : 395), for example, listed three other bird collections (91 specimens sent in 1842, 1845, 1856) and the *Documents* (1) show that a further 217 birds and 52 mammals were sent to the British Museum as early as 1830. In the *Day Books* an entry for 10 May 1831 reads 'Abstract copy of Duplicates from the Zoological & Entomological collections presented to various scientific bodies'. Apparently, there was sufficient duplicate material at this time and up to 1858 to send other bird and mammal specimens to the Zoological Society and London University, to Oxford, Cambridge, Liverpool, Dublin and Edinburgh, to the Norwich Natural History Society and William Swainson, and to Heidelberg, Genoa and Senckenberg. Birds especially were pouring into the Museum and Horsfield evidently only kept the best.

It was during this pre-Mutiny period that some important fish collections came to the India Museum. Theodor Cantor (1809–54), for example, sent several general collections, totalling about twelve thousand specimens, in the period 1842–54. His most important fish collection was that referred to in a memorandum as 'specimens collected from May 1842 to September 1845, while I held the office of Civil Surgeon of Prince of Wales Island (Pulo Pinang)' (*Lists*, **1** : 330). Elsewhere, there is a list of this material, headed 'These are the original specimens, referred to in "Catalogue of the Malayan Fishes" . . .' (*Lists*, **1** : 351–358).

In the 1860 transfer of specimens from the India Museum to the British Museum, there were 1461 fishes (numbered 1–1471 in the Register, but the 800's miscounted). None of these has the collector named, but in 64 there is a locality – Chusan. Since this is where Cantor worked (July 1840 to March 1841), these specimens at least must be Cantor's. His Malayan and other specimens were also in this collection, which Boulenger (1906 : 536) stated contained 'the types described by Cantor', and

these were presumably labelled in some way. The dried specimens (skins) in the British Museum have now been sorted (by Mr A. C. Wheeler) and the Cantor and other types labelled as such. The older types in alcohol, on the other hand, often rest on Günther's indications in the *Catalogue* and should not be taken at face value.

The small donation from the India Museum registered at the British Museum in 1880 (131 specimens) includes the following fishes stated to be from Cantor's collection :

BMNH.1880.2.2.99. *Ophiurus baccidens*
110–112. *Monocanthus geographicus*
113–114. *Astrape dipterygia*
115–116. *Synancea elongata*
130–131. [no name]

Also, '98. *Clupeonia perforata* Malayan Seas' is most likely a Cantor specimen, although it is not the type. Günther (1868a : 424) identified the latter as a specimen from the 1860 donation (BMNH.1860.3.19.845 – merely given as *Clupea* in the Register) and subsequent work has confirmed that choice (Whitehead, 1964 : 41).

In addition to specimens, Cantor presented to the Court of Directors a manuscript entitled 'General features of Chusan &c.' and also his collection of drawings entitled 'Sketches illustrative of the Descriptive Catalogue of Animals collected at Chusan . . .' (*Day Books*, 7 September and 10 August 1842). The drawings, which comprise 142 subjects (10 fishes), are bound in a single volume in the India Office Library ; five are by Cantor himself and these, together with one other, are from Penang, the remainder being Chinese copies of his Chusan drawings (including the originals of his 12 plates for the *Zoology of Chusan*, 1842 – see Archer, 1962 : 76–77 for details).

Another important donor to the India Museum was William Sykes (1790–1872). On his retirement from India in 1831, Sykes presented to the Museum some 4033 specimens, mainly birds, insects and plants, but with a few fishes amongst the 118 'animals in spirits' (*Lists*, **1** : 48). These were received on 23 July 1831 and were recorded in the *Day Books* as '9 chests off Lady Feversham – containing Major Sykes' Collection of Natural History made in the Peninsula – '. He also gave 194 drawings plus a further 27 of freshwater fishes (*Lists*, **1** : 58). Archer (1962 : 89 ; 1969 : 560) was able to find only 9 botanical and 11 topographical drawings in the India Office Library, but she mentioned the large collection of Sykes' notes and drawings in the British Museum (Natural History). In the *Day Books* (2 November 1831) it is stated that the Library received no less than 49 volumes of 'MS. Major Sykes' Papers respecting his collections Presented to the Court.', but it is not clear if these included drawings. Sykes died seven years before the final closing of the India Museum in 1879, but the bulk of his notes and drawings may have been returned to his heirs, these perhaps being the volumes acquired in 1920 by the British Museum (Natural History) from Henry Sothern & Co., Sale Catalogue No. 776. There are 21 volumes in all, of which 10 are marked *Agriculture* (notes, drawings of implements, some plants), 10 are marked *Drawings* (botanical and zoological water-colours, total 281, each neatly numbered), and one large volume is marked *Reports on Dakhin*. The latter contains descriptions of animals, 40 drawings, and some

meteorological notes for 1829 (mammals, pp. 1–183 ; birds, pp. 185–606 ; fishes, pp. 609–657 ; reptiles, pp. 661–670 ; meteorology, pp. 673–756). The ichthyology section contains 12 drawings of fishes. There are no fish drawings in the *Agriculture* volumes, but in the *Drawings* series there are 31 fishes (2 in vol. 4, 2 in vol. 6, 5 in vol. 7, 18 in vol. 8 and 4 in vol. 9). All have a careful note of the locality and date, together with one or two vernacular names, but the scientific name is either absent, added later or corrected. Twelve of these drawings appear to be the originals for those in the *Reports*. According to Archer (1962 : 89), all the drawings except a few small sketches were done not by Sykes himself but by Bombardier Llewellen Fidlor who accompanied him on his surveys.

The ichthyological notes are in two parts. The first is an introduction and an exposition of Hamilton-Buchanan's arrangement of Ganges fishes, the most important work available at the time. The second part contains descriptions of 40 fishes (30 said to be new) and is the draft of Sykes' paper on the 'Fishes of Dukhun', first presented to the Court of Directors in June 1831 and later sent, re-drafted, rearranged and with 42 new species named, to the Zoological Society in November 1838 (Sykes, 1841 : 377, footnote). The manuscript contains almost nothing that was not subsequently published (a few notes on weights of fishes in the margin). The 12 drawings mentioned above were part of the 28 coloured illustrations that were published with the paper and are indicated as having been returned from the Zoological Society in March 1857 ; the remaining 16 drawings all appear in the *Drawings* series. Apart from drawings of three species not included in the illustrations to Sykes' paper, the only additional information that can be got from this manuscript material is the individual sizes, dates and localities of the figured fishes, which is consistently given in the *Drawings*. Thus, *Hypophthalmus goongwaree* was 135 mm S.L. and *H. taakree* 216 mm, but there is no guarantee that Sykes kept his figured specimens.

The question of Sykes' types has been mentioned earlier (p. 68). In the Preface to the *Fishes of India* (p. iv), Day stated that the Sykes specimens that came to the British Museum were not labelled, but he seems to have forgotten the statement by Günther (1872 : 877) that two or three specimens had arrived with the name of Colonel Sykes written on the label, although all or most had no other information except, in Günther's recollection, perhaps a name but not the true one. Certainly, there is no mention of Sykes (or any other collector for that matter) in the British Museum Register for the large 1860 donation. In the *Catalogue* (vol. 5) Günther did not list any specimens at all for *Hypophthalmus taakree* (p. 52) or *H. goongwaree* (p. 61) and indeed gave the first merely as a footnote name. On the other hand, he was able to recognize two types of *Schilbe pabo* Sykes (p. 46), which suggests that the Sykes specimens were haphazardly labelled. In the smaller donation of 1880, however, the following 16 fishes are indicated as being from Sykes' Dukhun collection :

BMNH.1880.2.2.100. *Toxotes*
101–2. *Echeneis*
103. *Echeneis*
104. Cyprinidae
105–6. *Mastacembelus*
107. [no name]
108. *Silurus*
109. *Cobites* 7 Spec^{s}

Although *Echeneis* could hardly have come from the Deccan, No. 103 is in fact an *Echeneis* labelled 'Dukhim Col. Sykes Ind. Mus. Coll.' Some specimens could have perhaps been types, but they arrived much too late to enter into the argument between Günther and Day. The latter at least must have examined the collections in the India Museum, but there were only a few Sykes fishes and these had been incorporated in 1831, long before Sykes had given them their new names. It must be remembered too that the India Museum collections were more or less inaccessible during the period 1869 to 1875 and were probably not well arranged at Fife House prior to this. Day (1873e : 747) went so far as to suggest that Sykes might have given his types to other naturalists, Rüppell and Yarrell having certainly examined the material (Sykes, 1841 : 355). Thus the chances of locating types for more than a very few of Sykes' species are remote.

Other important donors of fishes to the India Museum were Edward Blyth (1810–73), who sent fishes from the museum of the Asiatic Society of Bengal in Calcutta, of which he became Curator in 1841 (*Lists*, **1** : 109, 131) ; and John McClelland (1800–83), who apparently sent collections in 1841, 1843 and 1856 (*Lists*, **1** : 143, 171 and 174–176). Boulenger (1906 : 536) claimed that the types of McClelland's cyprinid fishes came to the British Museum in 1859, but they are not given in the Register for that year and were almost certainly part of the 1860 donation (presumably with some indication on the specimen since there is none in the Register).

In 1839, Cantor made a small catalogue of the snakes and reptiles in the India Museum, at the same time presenting some fishes collected while he was attached as Surgeon to the Company's Marine Survey in the Ganges Delta (*Documents*, **2** : 79, 83). A more comprehensive catalogue of the fishes in the museum was prepared by Horsfield in 1856, but again this was never published. It is headed 'Catalogue of the Fishes in the Museum of the Hon. East India Company. By Dr Horsfield. 1856' (*Documents*, **2** : 44–78). It consists of 68 pages with small slips pasted four to the page (total 272 items) and it contains reference to specimens collected or presented by Blyth, Cantor, Griffith, Richardson, Tytler, Sykes, etc., but there are no Day specimens.

Together with the museum of the Zoological Society, the India Museum was one of the most important repositories for Asiatic specimens during the early part of the nineteenth century. It was overtaken by the middle of the century by the British Museum, chiefly as a result of Günther's initiative in soliciting specimens, and it is significant that it was to the British Museum that both the India Museum and that of the Zoological Society disposed the bulk of their specimens. The centralizing of these collections was probably inevitable, but one can only regret that in both cases the specimens arrived at the British Museum with such inadequate data.

b. *British Museum, 1864–70*

The Accession Register shows that in the early part of his ichthyological career Day presented or sold 18 collections to the British Museum, totalling 416 fishes, 13 amphibians and 42 reptiles ; the types of over sixty of his fish species were included. These collections were received in three distinct periods. Those of 1864–65 were evidently brought back by Day on his second period of leave and at

least one batch was delivered personally to Günther by Brisbane Neill on 4 January 1865 (see p. 000); these collections were all presented, and they totalled 37 specimens of 28 species of fishes. Day next sent specimens to the British Museum in 1867–68 and these were all dispatched from India and purchased through Brisbane Neill. They stemmed from Day's time in the Nilgiris, Kurnool and Madras and comprised 195 specimens of 123 fish species. The third series were all presented in 1870 and would be specimens that Day brought with him when he returned to England on leave. These collections comprised 184 specimens of 144 species. After that, Day sent no more specimens to the British Museum for almost twenty years, his final collection to the British Museum being that of 1888 (or 1889 – discussed on p. 148).

For the specimens sold to the British Museum in 1867–68, Day made dated lists on spare pages bound in at the back of his proof copy of the *Fishes of Malabar* (Q 602). Unfortunately, these lists rarely give a locality and only in one case is there a possible indication of type status (*Caranx nigrescens* 't p'). For the first of these listed collections, dispatched 27 March 1867 and containing 20 fish species and 2 amphibians, Day wrote what appears to be the price paid, £6.10.0; in the previous year Bleeker was apparently paid 10 shillings per specimen by the British Museum (Whitehead, Boeseman & Wheeler, 1966 : 12). It is of interest to note that, following the final batch (sent with Chipperfield in about June 1868), Day wrote firmly 'No more fish to be sent to BM FD'. There are, however, two more batches listed after this, designated merely 'No 1 August' and 'No 2', containing fishes from Pondicherry, Tranquebar and the Cauvery river (21 species, but 7 not named). Since these cannot be matched with the data in the Accession Register, they may perhaps be material that was given to the Madras Museum or even Calcutta. None is a Day species. By 1870, however, Day had relented and he once again presented fishes to the British Museum.

In those days little information was entered in the Accession Registers, so that for the Day collections there is sometimes only a generic name, which may or may not correspond to that first used by Day, or there may be only a family name, or even no name at all. Likewise, locality data are sometimes missing and in very few instances is there any reference to type status (see p. 149–150). Such information existed, however, perhaps as labels inside the bottles, since the jars are now labelled with locality and many types have been marked as such. In fact, Günther kept five lists sent by Day (those accompanying the specimens of 1867–68) and these are now filed with Day's letters in the letter-books of the Zoology Department (BMNH. MS. Z., folios 104–109). In these lists Day indicated which specimens he considered to be types and these will be discussed below.

The eighteen collections sent by Day will be reviewed chronologically (actually sent in more than eighteen batches, but at least three registered together in November 1867).

First series, 1864–65

1. BMNH.1864.7.9.3–8 (5 fishes, 1 reptile)
   All from 'Hill ranges of Travancore, Malabar'; all with generic names;

total of 3 fish species. Specimens of *Puntius denisonii* and *P. melanampyx* (*Labeo* types) included, as also Günther's *Catopra malabarica*.

2. BMNH.1864.10.5.1 (1 fish)
Skin of *Mesoprion borensis* from Madras.

3. BMNH.1865.1.19.8 (1 fish)
Specimen *of Mugil poicilus* from Cochin (type).

4. BMNH.1865.7.17.1–27 (27 fishes)
A locality (Cochin) is given for only 6 species ; all are identified to species except 8 specimens (Siluridae, *Teuthis*, *Caranx*, *Clupea*, *Tetradon*, *Mastacembelus*) ; total of 20 species. The collection contains the following 13 out of the 19 new species that Day said he had presented to the British Museum (FM., Preface : vi).

Paradanio aurolineatus
Amblypharyngodon jerdoni
Puntius vittatus
Puntius perlee
Puntius parrah
Garra malabarica
Platacanthus agrensis
Nemacheilus triangularis
Pseudobagrus chryseus
Hypselobagrus armatus
Mastacembelus guentheri
Ophiocephalus diplogramme
Caranx melanostethos

In our Table of potential types (p. 154) we have given preference to these specimens and have omitted specimens of these species received in subsequent batches.

Of the 6 remaining species from Day's published list, 3 had already been donated (*Puntius denisonii* and *P. melanampyx* in collection No. 1 above ; *Mugil poicilus* in collection No. 3). On the other hand, *Hara malabarica* and *Nandus malabaricus* are in neither the present batch nor in any subsequent ones. The final missing species is *Barilius bakeri*, of which a type specimen (BMNH.1866.5.2.91) has hitherto been recognized from a large collection of Bleeker's fishes received in 1866 (see also Günther, 1868a : 285). In fact, 4 more of the Day species listed above appear in this same Bleeker collection (*A. jerdoni*, *P. aurolineatus*, *P. denisonii* and *G. malabarica*), but not the missing *Hara* and *Nandus*. It is true that Day had sent a specimen of *Catopra malabarica* and certain other Cochin species to Bleeker in 1865 (see p. 142), but it seems unlikely that Bleeker would have almost immediately sold these to the British Museum. Possibly Day's specimens were partly mixed with Bleeker's during incorporation.

The types of *Puntius parrah* and *P. perlee* also present a problem since Günther (1868 : 142) claimed that the type of *perlee* matched better with the description of *parrah*, while the type of *parrah* agreed with neither and was probably new.

5. BMNH.1865.10.22.1–3 (3 fishes)
No names or localities ; presumably 3 species. One of the specimens was

Day's *Nemacheilus triangularis*, of which a specimen had already been included in the previous batch.

Second series, 1867–68

6. BMNH.1867.5.30.1–27 (27 fishes)
Mainly marine fishes, the first being stated as from Madras, the remainder implied as such but from the evidence of the labels on the jars clearly not ; all identified to species except one (*Schilbe*) ; total of 20 species. Included are specimens of Day's *Seriolichthys lineolatus*, *Platacanthus agrensis* and *Trichiurus malabaricus*, the first probably a type, the second already sent in the fourth batch, and the third labelled 'Madras' on the jar and thus not from the type locality (Malabar). The batch was sent on 27 March (Q 602).

7. BMNH.1867.7.24.1–55 (55 fishes)
All from the Nilgiris or rivers on or around their bases ; all identified to species ; total of 25 species, of which the following 12 were indicated as 'Nov. Spec.' by Day in his list to Günther (BMNH.MS.Z., folio 104, dated 15 January 1867) :

Paradanio elegans	*Nemacheilus guentheri*
Barilius rugosus	*Nemacheilus denisoni*
Rasbora neilgherriensis	*Garra jerdoni*
Paradanio neilgherriensis	*Rasbora woolaree*
Puntius grayi	*Hypselobagrus vella*
Nemacheilus semiarmatus	*Chela argentea*

In the end, Day did not use the name *Hypselobagrus vella*. Two further species are marked 'Day', *Paradanio aurolineatus* and *Amblypharyngodon jerdoni*, but specimens of these had already been presented in the fourth batch. The present batch is not among the lists in Q 602.

8. BMNH.1867.8.11.1–20 (1 fish, 9 amphibians, 10 reptiles)
The single fish is merely given as *Muraena* in the Register. The list is headed 'Neilgherries', but this has been deleted. No record in Q 602.

9. BMNH.1867.11.6.1–41 (35 fishes, 6 reptiles)
All given as 'Madras' in the Accession Register ; all but one (*Serranus*) named to species ; total of 25 fish species. Two original lists by Day survive, apparently sent with the specimens but with no type indications (BMNH.MS.Z., folios 105 and 106, dated 27 June 1867 and June 1867, the second list incomplete and damaged). According to lists in Q 602, these were sent in three or four batches (9 May, ? 10 June, 18 June and 27 June), but with no locality data.

10. BMNH.1868.4.15.1–12 (11 fishes, 1 amphibian)
No localities given in Accession Register ; all with species names ; total of 6 fish species. Day's original list gives the following information on types (BMNH.MS.Z., folio 107, dated 9 November 1868) :

Brotula maculata typical specimen [in fact 2 fishes]
Gobius madraspatensis 2 pairs of typical specimens
Gobius neilli I think the original
Panchax argentea } partly described from
,, *rubrostigma* } [the second in fact a Jerdon species]

According to the list in Q 602, this batch was brought back to England by Col. Kitson, having been packed in February 1868; no locality data given in list.

11. BMNH.1868.5.14.1–14 (13 fishes, 1 reptile)
No localities given in Accession Register; all with species names; total of 12 fish species. Day's list to Günther gives the following information on types (BMNH.MS.Z., folio 108, dated 10 March 1868):

Cossyphus ncilli (Day) typical
Scorpaena rosea (Day) typical
Silurus punctatus (Day) partly used for the description in Zool. 2 specimens
Euctenogobius striatus (Day) to be described in Zool. proceed. shortly
Upenoides guttatus (Day) [no comment]

According to the list in Q 602, these were given to Dr Shortt on 23 March 1868 to bring to England; no locality data given in list.

12. BMNH.1868.10.27.2–54 (53 fishes, of which 16 were skins)
Localities Madras, Bowany and Kurnool given; all with species names except 10 (*Sciaena, Teuthis, Triacanthus, Garra, Rasbora, Muraenesox*); total of 34 species. A note by Günther in the Accession Register states: 'The duplicates placed in store not registered', this referring to 5 of the skins. Day's list to Günther is headed 'List of fish sent by Dr Chipperfield round the Cape about June 20th 1868' and at the end 'As I was going to be absent some months from Madras the foregoing contain some of my finest specimens' (BMNH.MS.Z., folio 109, undated but with note by Günther 'Recd Dr Neill 14 October 1868'). Day gave the following information on types:

Bottle No. 1
[*Barbus*] *guentheri* (Day) 2 typical Kurnool
,, ,, *lepidus* (Day) 1 ,, Bowany

Bottle No. 2
Platacanthus maculatus (Day) typical specimen Madras
Pricanthus [sic] *Madraspatensis* (Day) 1. typical specimen Madras
Rhynchichthys ornatus (Day) 1. ,, ,, ,, Madras
Barbus vittatus (Day) 4. 1.1.20 [no further comment; already sent in 1865]
Danio lineatus 5 typical specimens
Stuffed specimens some very large
2 *Barbus neilli* typical specimens one 36 inches long weighed upwards of 13 lbs Kurnool

1 *Caranx nigrescens* (Day) typical Madras

Three lists are given in Q 602 (i.e. Bottle No. 1, Bottle No. 2 and stuffed specimens), with localities only for the first. These lists are undated and merely state 'By Dr Chipperfield'.

Third series, 1870

13. BMNH.1870.5.2.1–22 (22 fishes)
Two localities given, Calicut and Wynaad ; all with species names except 4 (*Ambassis, Nemacheilus*) ; total of 13 species. Day's address in the Accession Register (not a normal practice) is noted as 'Gt Russel St'.

14. BMNH.1870.5.18.1–86 (77 fishes, 8 reptiles, 1 amphibian)
Five localities given (Malabar, Wynaad, Andamans, Nicobars, Burma) ; all fully named except 17 (*Apogon, Mesoprion, Plesiops, Gobius, Muraena, Caranx, Serranus, Cubiceps*) ; total of 66 fish species.

15. BMNH.1870.6.14.1–72 (69 fishes, 3 reptiles)
Six localities given (Orissa, Andamans, Burma, Pinang, Singapore, Abyssinia, the latter perhaps visited on voyage back to England). All fully named except 27 (*Glyphidodon, Gobius, Engraulis, Platycephalus, Ambassis*, Percidae, *Scoliodon, Leuciscus, Gasterosteus, Blennius, Atherina, Bagrus, Hemiramphus, Corica, Mastacembelus*, Pleuronectidae) ; total of 55 fish species.

16. BMNH.1870.6.18.5–7 (3 reptiles)
No localities ; 2 skins and 1 skull of crocodiles.

17. BMNH.1870.7.12.1–11 (8 fishes, 3 reptiles)
Three localities given (Orissa, Burma, Nicobars) ; all with species names except for 2 (*Trichopterus, Syngnathus*) ; total of 7 fish species.

18. BMNH.1870.8.14.4–16 (8 fishes, 7 reptiles, 3 amphibians)
No localities given ; 1 fish with generic name only (*Muraena*) ; total of 3 fish species.

The final collection sent by Day to the British Museum (1888–89) will be dealt with separately (see p. 148).

c. *Government Central Museum, Madras, 1866–68*

In an undated letter to George Shaw (Q 654, therefore probably from Ootacamund in 1866), Day wrote that he had made a 'splendid collection of the fishes [of the Nilgiris] and hope to send a large number to the Madras Museum'. This museum was an obvious place for Day to deposit specimens, at least in the period 1866–68 when he was at Ootacamund, Kurnool and in Madras itself. However, he seems later to have crossed swords with Captain J. Mitchell, the Superintendent of the Museum, with the result that he was 'unable to obtain leave from the Curator to inspect the fishes in that institution, neither had an appeal to the local Government a more fortunate result' (Day, 1871b : 97). After Mitchell's death and George Bidie's succession to the post, Day may well have sent specimens again, although from 1871 he was much more involved with the museum in Calcutta.

Unfortunately, the Madras Government Museum has been unable to find for us any specimens, letters, registers or catalogues relating to Day or his collections. However, it is stated in the registers of the Zoological Survey of India in Calcutta that several specimens of Day's fishes were purchased from the Madras Museum at some time between 1876 and 1879. Possibly other Madras specimens were transferred at a later date.

The Madras Museum is mentioned by Day in two letters that he wrote in 1889 to William Flower, at that time Director of the British Museum (Natural History). In the first, Day enclosed a letter from Madras and said 'if I erroneously omitted sending the fish and they are taken to the B.M. please let Mr Thurston have them – I am almost confident I sent them to him – I find a stuffed *Cephaloptera* of his was taken to the B.M.' (18 February 1889, BMNH.MS.Z.). Three weeks later he thanked Flower (or Günther) for letting him know, and he added: 'I am glad the *Gobius thurstoni* is found as it is the property of the Madras Museum will you kindly rectify my error' (7 March 1889, BMNH.MS.Z.). *Gobius thurstoni* was a species that Day had described the previous year in the *Supplement* to the *Fishes of India* and the implication is that Day had borrowed material from Edgar Thurston, Superintendent of the Madras Museum (probably while the latter was in England on leave), and that it had been mixed with the final collection to the British Museum. In May, Thurston wrote to Günther from Madras to acknowledge receipt of a specimen of *Mylobatis* 'returned as desired by Mr Day with your letter of the 7th ultimo' (22 May 1889, BMNH.MS.Z.); he later acknowledged the return of 'my small fishes with numbers attached', but asked if he could have a list of identifications (8 June 1889, BMNH.MS.Z.). For some reason, this batch did not include the holotype of *Gobius thurstoni*; the species was described from a single specimen which must be the one included in Day's final gift to the British Museum and registered as BMNH.1889.2.1. 3445. Similarly, *Apogon thurstoni*, a specimen of *Ambassis myops* and Day's holotype of *Acanthoclinus indicus* (which is also possibly a Thurston specimen), were all subsequently incorporated into the British Museum collections. Since the Madras Museum cannot now trace any Day specimens, nor even any documents relating to Day, it is just as well that these few Thurston specimens were not returned.

d. *Museum of Comparative Zoology, Harvard, 1872*

The sympathetic letter written to Day by Richard Bliss (see p. 68), commiserating over Günther's 'personalities', was dated 22 July 1872. By this time Harvard had already received a small collection of fishes from Day, recorded in the Register as 'received from Dr F. Day in exchange Jan. 23, 1872'. It seems likely that the initiative for this exchange came from Louis Agassiz, who was at that time rapidly building up the Harvard collections. In October 1872 the first part of this Day collection was entered in the Register, but for some reason Bliss completed and signed only the first two pages (Reg. Nos 4226–4275), all of which were given name and locality. Thereafter, perhaps in more than one hand, the list becomes very scrappy, with many gaps or with names and localities misspelt (probably from Day's list). For one fish (No. 4280) the locality was originally given as 'Canara',

but 'Cuba Poey' has been substituted. Thus, it is not possible to give an exact number of either species or specimens, but in total the numbers run from 4226 to 4325, so presumably Day sent a round number of one hundred specimens.

There are 9 species attributed to Day in the list ; all are spurious. However, there are in fact 10 of Day's species included and these may be found to be types although none was indicated as such (apart from a cancelled statement that 'Nos 4267 to 4329 Types of Day's Malabar Fishes').

4270 *Barbus thomasi* (sic) Canara
4276 *Ophiocephalus diplogramme*
4280 *Bagrus chryseus* Malabar
4282 *Barbus jardani* (sic) Canara
4291 *Barbus wyhaadenni* (sic) Vithry
4292 *Barbus dubius* Bowany
4299 *Barbus lepidus* Canara
4303 *Barbus punctatus* Canara
4314 *Barbus vittatus* Canara
4316 *Etroplus canarensis* Canara

e. *Indian Museum, Calcutta, 1866–79*

Day's specimens now in the collections of the Zoological Survey of India in Calcutta date back to donations made as early as 1866 to the Asiatic Society of Bengal. Day had become a member of the Asiatic Society in 1869 and in that year he had also worked on their collections and especially on the types of species described by Edward Blyth (Day, 1869b). However, the major collection of Day's fishes in Calcutta was not received until after the Asiatic Society's museum had been transferred (at least in name) to the Indian Museum.

The Asiatic Society, founded in 1784 by Sir William Jones, did not initially have a museum. Inevitably, specimens accumulated and in 1814, largely at the instigation of Nathaniel Wallich (1786–1854), a museum was formally begun 'for the reception of all articles that might be sent to illustrate Oriental manners or history, or to elucidate the peculiarities of Art or Nature in the East' (Mookerjee, 1914 ; see also Prashad, 1931 : 34). Wallich was appointed Superintendent, although for two periods he was obliged to combine his duties with those of Superintendent of the East India Company's Botanic Garden and at times he found the curation of the museum beyond him. In 1820, for example, he pointed to the ill state of the museum and recommended that it be looked after by a man on a salary (note to ? Secretary of Society, 10 March 1820, letter 188, File 171, Asiatic Society Library*).

In 1836, owing to the failure of Palmer & Co., the Society's bankers, the museum could no longer be properly financed. Appeals to the Government for help eventually brought a small grant in 1839. Meanwhile Wallich was succeeded by a number of Curators, including McClelland and, in September 1841, Edward Blyth, who did much to augment the vertebrate collections. By 1856, however, it was clear that the Society's museum could only continue as part of a nationally supported institution and in 1862 the Government finally agreed to implement the Society's proposals for an Imperial Museum in Calcutta. With the passing of the Indian Museum Act

* File 171 in the manuscript collection of the Asiatic Society in Calcutta is a calendar of 1494 letters (about forty are pre-1800) from Roxburgh, Wallich, Hardwicke, Hodgson, Blyth and others, the file being marked *Proceedings of the Society 1797–1840*. We came across it accidentally during a fruitless search for Day letters. At the time of our visit (13 December 1972) this large and valuable collection of manuscripts could only be searched by random sampling of cupboards or shelves. We hope that its treasures will one day be more accessible by provision of some kind of index.

of 1866, the present Indian Museum building on the Chowringhee was erected (occupied in 1875, completed in 1877) and the collections formally handed over to a Board of Trustees. John Anderson (1833–1900), previously Professor of Natural Science at the Free Church College in Edinburgh, was appointed Curator from September 1866 and in October 1869 he was joined by James Wood-Mason (1846–1914) as Assistant Curator.

Before transferring the collections from the old Asiatic Society to the Trustees of the new Indian Museum, the Council of the Society ordered that copies be made of their catalogues. On 29 January 1869 John Anderson submitted the catalogues, which were then compared with the previous ones, and by August the Council was ready to hand over the collections and catalogues (MSE. 57, MS.Proc. Counc. Asiatic Soc., **7**). It is not clear whether the two catalogues described below were these copies ; they are dated 1873, but they may have been completed subsequent to the transfer.

The first is a catalogue of the Society's exhibited fishes compiled by Anderson, being a leather-bound volume (33 × 19·7 cm), now in the Zoological Survey, Calcutta. There is no title on the outside, but the first page is inscribed :

> List of fishes exhibited in Cabinets comprising chiefly the Collection of fish formed by Edward Blyth during his Curatorship of the Asiatic Sos' Museum.
> April 1873 J. A. [John Anderson]

This catalogue contains entries numbered 1–1085 (the last four erased) and it refers to 4190 specimens collected or donated by Blyth, Anderson, Wood-Mason, Lt.-Col. Tytler, Major E. B. Sladen, Stoliczka and many others. There are also 464 specimens collected by or on behalf of Day (277 registered numbers). There is usually no indication of the way the Day specimens were acquired, but a few are marked 'by exchange' (e.g. No. 218 *Gobius masoni* Day and No. 222 *Eucteno-gobius cristatus* Day, both of these being incorporated on 21 November 1872). A specimen of *Labeo isurus* (No. 697) is marked 'Sent to Dr Day 21 Sept. 1875 to be figured' ; it was subsequently returned and registered as *Cirrhina reba*. None of the Day specimens is indicated as a type.

For some species these earlier Day specimens could be more important than those of Day's major collection sent to Calcutta in 1876–79 since Day may well have combined typical and non-typical material later on. The earliest specimen dates from October 1866 and the latest from June 1873, but only 10 specimens are dated. Possible Day types from this Catalogue/Register are indicated in our Table (p. 154) by the prefix A (total 57 species).

John Anderson also prepared a second catalogue in which were listed the non-exhibited fishes, being a cloth-bound volume also in the Zoological Survey of India, where it is referred to as the 'Duplicate Catalogue' because its numbers (but not contents) duplicate those of the 'Original Catalogue' described above. There is no title on the outside, but the first page is inscribed :

> This Volume contains those fish which have been entered in the Curator's Report but which have not been exhibited in the general collection. Each

specimen is entered under a special number in the form of a circular tin label. They were all entered at the dictation of the Curator and twice checked by him, before they were placed in the present bottles in which they are stored.
15 January 1873 John Anderson

This catalogue contains entries numbered 1–440 and it refers to fishes collected or donated by Captain Homphray, Reginald Warneford, Stoliczka, Wood-Mason and R. Beavan. The bulk of the specimens, however, are those of Sladen and Day, the latter mainly from Burma and the Andamans. The first entry is, in fact, a Day specimen dated 1869, but dates are not otherwise given. There are 202 items from Day (but some species repeated), or 244 specimens if only one per entry. Possible Day types in this Catalogue/Register are indicated in our Table (p. 154) by the prefix B (total 6 species).

This duplicate collection is combined with the main collection of fishes at the Zoological Survey. The specimens all bear round, numbered metal tags corresponding to the catalogue numbers.

These two groups of Day fishes, totalling about seven hundred specimens, are overshadowed by his main collection, sold to Calcutta in 1876–79. The events which led Day to part with his figured specimens, the cream of his collection, have already been outlined (p. 52), and it has been suggested that Günther was responsible for not seizing the opportunity to acquire this collection for the British Museum. Having failed to interest either the British Museum or the India Museum at South Kensington, and perhaps regretting his decision to sell these specimens to Ford in return for the additional plates for the *Fishes of India* (see p. 53), Day now made an approach to the new Indian Museum in Calcutta. Although the building had not been completed by the time of Day's departure for England, he was obviously impressed with the way the Museum was developing and confident that his specimens would be properly cared for.

In late 1875 Wood-Mason was acting as Superintendent, Anderson presumably being in England on leave after his participation in the disastrous second expedition to Yunnan (Anon., 1914 : 113 and lxiii). Day apparently made a proposition to Anderson, probably in London in November or early December 1875, and at a subsequent meeting of the Trustees of the Indian Museum on 12 January 1876 a report from Anderson (11 December 1875) and statements by Day and by Ford were read out. The Trustees recorded that 'Dr Anderson states that Dr Day's collection of Indian fishes, comprising about 3,000 specimens is now on sale in London, at an estimated cost of £380, and recommends the purchase to the Trustees' (*Selected extracts from the minutes of the Trustees*, 8). The Finance Committee approved the purchase and Anderson was asked to confirm the arrangement with Day at once (loc. cit.). On 13 September 1876 a certified copy of the Agreement was submitted, although Anderson had meanwhile been requested to complete the purchase and to superintend its transport to India when he himself returned from leave (in June 1876 – Anon., 1914 : lxiii). In his Superintendent's Report Anderson recorded that the first consignment was of 'ten large stone jars, fully packed with alcoholic specimens, each carefully wrapped up in cloth, and of two boxes

containing 292 prepared skins of fishes'. On 14 January 1878 the Trustees remitted £95 in anticipation of the third portion of Day's collection (*Selected extracts from the minutes of the Trustees*, 9) and on 11 August 1879 Anderson wrote to Day asking him to confirm that the whole collection had now been sent (loc. cit., **10**).

It is interesting to note that Day appears to have lowered his price from the £750 that he asked of the British Museum for what was implied to be the same collection. Thus, for the British Museum it was 'my 1st duplicate collection' (see p. 53), while for the India Museum in South Kensington it numbered 'about 1,200 species' (Anon., 1876 : 334), or 4000 specimens (Minute Paper No. 910, SCHC.). Presumably this was the same as the 3167 specimens bought by Calcutta.

This major collection of Day's fishes was recorded in yet a third Catalogue/Register, which is entitled on the cover 'Register of Presentations to Indian Museum'. The entries relating to Day's fishes are numbered 1–3186+7151–7165, with various gaps (see below) (total 2936 items). The first batch is dated 2 August to 5 December 1877 (Nos 1–414) ; the second batch is dated 30 August 1878 to 8 February 1879 (Nos 415–1112) ; and the third batch is dated 23 April to 14 November 1879 (Nos 1113–3186) ; the remaining 16 fishes (Nos 7151–7165) were registered later. For each specimen (numbered with a rectangular tin label) the Catalogue gives number, name, locality and a date/serial reference, while in a final column are 'Remarks'. The latter state whether the fishes were those used for the illustrations for the *Fishes of India* and sometimes there is a comment on their type status, e.g.

1. *Trachypterus ovatus* Figured, Plate 51a fig. 1
215. *Boleophthalmus dentatus* Type
291–6. *Diagramma grisium* [sic] Type and 5 others Sind & Bombay Pl. 21, fig. 2 [against No. 293]
284–8. *Nandus marmoratus* Type and series of 4 more pl. 32 fig. 1

These remarks seem to have been written by Anderson himself up to No. 2776, but thereafter in another hand (probably by Wood-Mason). The indication 'type' does not appear for every figured specimen and occasionally it is given for species of Hamilton-Buchanan or Cuvier and Valenciennes ; in some of these cases at least, the specimens are the types of junior synonyms proposed by Day, showing that he had left the type indication in the jar after having reidentified the specimen. The status of the specimens in this Day collection is discussed below (p. 153).

On 1 July 1916, the Zoological Survey of India was inaugurated and the Zoological Section of the Indian Museum was assigned to it, although still housed within the Museum. In December 1941, however, with the entry of Japan into the war, it was decided to evacuate all type specimens and Class 1 exhibits to the Forest Research Institute at Dehra Dun. The rest of the collections were moved to Kaiser Castle at Benares in May 1942 (Chopra, 1947), this being the temporary headquarters of the Zoological Survey. Kaiser Castle lies on one bank of the Varuna river, a tributary of the Ganges. In September 1943 the river flooded, entering the compound of the Castle on the 26th and rising to about a metre above plinth level the following day. In the cellars, where 42 racks contained bottles of fishes, the water remained at ceiling height for two days and caused chaos.

Labels were washed off or made illegible by silt, and bottles tilted, floated or sank. The remaining 25 racks of fishes were less badly affected. Not only specimens, but also books and letters were damaged, including registers. As luck would have it, type specimens had just been brought from Dehra Dun and in some Sections were being unpacked and arranged.

As far as fishes were concerned, most of the type specimens were saved, but the total loss to the fish collection as a whole has been estimated at about 20 per cent. This largely explains the missing Day material shown in parentheses in our Table (p. 154).

The system of Catalogue/Registers in use in the Zoological Survey, and thus the numbers used here for the Day specimens, is not straightforward and needs explanation. In fact, there are four such Catalogues, two from the Asiatic Society and two from the Indian Museum collections, as well as further Catalogues transcribed from the originals. Since data from the Asiatic Society Catalogues were later transferred to the Indian Museum Catalogues, but without comparable alteration of the numbers accompanying the actual specimens, the same number can be repeated and must be prefixed (by a letter) for the two earlier Catalogues.

No. 1. *Asiatic Society*, exhibited series, completed April 1873
'Original Catalogue'

Numbered 1–1085 (last 4 erased); 4190 specimens, of which 464 were Day's (59 Day species included)

Data transferred to Catalogues 3 and 4, becoming Nos 3206–7180 and 7181–7433 respectively (increase due to registration of specimens and not just species; also, Nos 7151–7165 'Purchased from Dr Day' about 1877 and thus not part of original Asiatic Society Catalogue)

Reg. Nos in our Table (p. 154) prefixed by A.

No. 2. *Asiatic Society*, non-exhibited series, completed 15 January 1873
'Duplicate Catalogue'

Numbered 1–440; no clear indication of number of specimens, but 202 species (some repeated) or 244 specimens if one per species, from Day (6 Day species included)

Data transferred to Catalogue 4, becoming Nos 7434–7862 (total 428 items since some omitted, although a few entered later)

Reg. Nos in our Table (p. 154) prefixed by B.

No. 3. *Indian Museum*, from 2 August 1877 to 14 November 1879
'Register of Presentations'

Numbered 1–3205+3206–7180 (the latter from Catalogue 1 except 7151–7165, which were later Day specimens)

Contains bulk of Day specimens, i.e. those purchased in 1876–79, being Nos 1–2785, 2787–3029 (with gaps at 2786, 2790, 2798, 2802–3, 2805, 2807–9, 2812, 2815 and 2817 – all purchased from Madras Museum) and 3031–3186 (with gaps at 3062–5, 3083–5, 3089–94, 3097–3104, 3109,

3111 and 3138–66 – all purchased from Madras Museum except 3062, 3109 and 3111 which have no history) (total 3122 items)*

Reg. Nos in our Table (p. 154) not prefixed.

No. 4. *Indian Museum* (continuation of Catalogue 3)

'Register of Presentations'

Numbered 7181–7433 (from Catalogue 1)+7434–7862 (from Catalogue 2) +7863–14350 (subsequent registrations)

Contains the bulk of the *Investigator* collections; also some further Day material at Nos 7884, 8068–70, 8134–5, 8143, 8281–8302, 8591–8600, 8612–8863 (except 8811 and 8851), 8902–38, 9148, 9287, 9460–1, 9486–8, 9718–19, 9739, 10171, 10173, 10193–4, 13142 (type of *Crayracion cochinensis* Day, formerly 7158 but re-registered) (total 143 items)

Reg. Nos in our Table (p. 154) not prefixed.

These four catalogues were damaged in the Varuna floods of 1943. The first two were subsequently rewritten as a single catalogue; a small label pasted inside the original Duplicate Catalogue reads: This register has been copied out by me (dated 31 October 1946 and signed by Mohsin Ali). Catalogues 3 and 4 (Register of Presentations) were also damaged during the Varuna floods; they were later rewritten by Mohsin Ali and bear a similar label dated 31 October 1946.

f. *Zoologisches Museum, Berlin, 1874–82*

Over a period of fifteen years, from 1872 to 1887, Day kept in close touch with the Berlin museum, most especially when he was writing the *Fishes of India* and the *Fishes of Great Britain*. Its importance to him lay not only in its general collections, but in the type material of Marcus Elieser Bloch (1723–99) and, perhaps of equal value, in the considerable amount of help and advice that he received from Wilhelm Peters (1815–83), its Director from 1857.

A natural history museum had existed in Berlin since 1770, although it was not in fact the successor to the earlier Königliche Kunst- und Naturalienkammer of the Prussian kings, which had accumulated 'rarities' since the time of Friedrich Wilhelm, the Great Elector, in the seventeenth century.† With the founding of the Humboldt University in 1810, the museum was given a departmental structure, J. K. W. Illiger being the first Director of the new Zoological Museum. In 1969 the separate mineralogical, palaeontological and zoological museums, together with one for ethnology, were once again united into a Museum für Naturkunde of the Humboldt University (Daber, 1970). At the time of Day's visits to Berlin, the Zoologisches Museum was in the main university building on the Unter den Linden, not moving to its present site on Invalidenstrasse until 1889.

* Nos 3187–3205 of this catalogue refer to 19 fish skins (2 species of *Ptychobarbus*, 4 species of *Schizothorax*) collected on the Yarkand expedition of 1873 (see Day, 1876a). Although not donated by Day himself, the specimens were examined by him and representatives of four of Day's species are included (*P. laticeps*, *P. longiceps*, *S. microcephalus*, *S. irregularis* – added to our Table, p. 154).

† In the earliest catalogue of the Great Elector's library, a manuscript of 1668 by Johannes Rawe now in the Handschriftenabteilung of the Deutsche Staatsbibliothek in Berlin, a number of natural history specimens are included, some dating from the Brazilian studies of Piso and Marcgrave. Possibly some of these early specimens found their way into the natural history museum, but there seems to have been no wholesale transfer.

Day's first letters to Berlin were written immediately before and after his quick visit to England to get married in 1872 (Bombay, 6 March and 'en route to India', 5 May 1872, ZMB.MS.). They were addressed either to Eduard von Martens (1831–1904), who had been a fellow student of Günther's at Tübingen, or to Franz Hilgendorf (1839–1904). There is then a gap of two years, but on Day's final return to Europe in 1874 the correspondence was taken up again, this time with Wilhelm Peters; there are 47 letters from Day to Peters in the archives of the Zoologisches Museum, from 27 September 1874 to 26 April 1882. Two final letters, dated 20 and 27 December 1887, are addressed to von Martens.

For the most part, Day's letters to Peters concern the examination of types, the announcement of visits, and the donation or exchange of specimens. Day's debt to Peters was considerable, the latter being asked to examine numerous specimens and often to give an opinion on their true identity. Quite early on Peters was requested: 'Please look over the papers of Fishes of India as I send them for your remarks' (3 April 1875, ZMB.MS.), and from the tone of the letters there is no doubt that Day had great faith in Peter's judgement. In late January 1875 Day paid his first visit to Berlin, returning for another visit in June that year ('thank you' letters of 6 February and 26 June 1875, ZMB.MS.). He seems not to have gone to Berlin the following year, visiting Paris instead; he may have gone again in 1877, probably went in October 1878, may have gone in 1879, but definitely went at the end of May 1880 (letters of 2 January and 3 August 1876, 1 April 1878, 27 May 1880, ZMB.MS.).

The Day letters in Berlin show that he sent specimens to Peters on at least thirteen occasions between 1874 and 1880, and the Registers give a final fish collection in 1882. In addition to fishes, Day also sent birds, mammals and reptiles, including a large '*Crocodilus ponticerrianus*' (=*Crocodylus porosus* Schn.) which he promised in July 1875 but did not finally dispatch until three years later (*Gallus banksii* – 14 October 1874; eagles – 26 June 1875; pair of Lammergens, packed up by the Governess – 2 January 1876; the crocodile – *c.* 13 April 1878; small mammals – 14 February 1880; ZMB.MS.). Day also forwarded to Peters some of Walter Elliot's mammals, together with the latter's drawings, notes and a borrowed copy of his paper (3 April 1875, ZMB.MS.).

From the Catalogue, it appears that Day sent a total of 295 fish species (or 331 specimens), of which 13 species (15 specimens) were European, the rest being Indian. Of the Indian species, 27 were described by Day and 21 of these are marked in the Catalogue with an asterisk (? by Peters). Day occasionally referred to the status of the specimens that he sent. Thus, the 61 carps dispatched in the summer of 1880, of which 8 are Day species, were definitely stated to be 'from my duplicate collection' (5 July 1880, ZMB.MS.). This is perhaps not unexpected since Day had by this time already disposed of his first collection to Calcutta. On the other hand, he had earlier written that 'I have some types of my Indian species ready for you . . .' (22 August 1875) and had already sent a specimen of *Serranus stoliczkae*, a name which he stated was 'not yet published' (3 April 1875, ZMB.MS.). However, the only clear indication of a type is Day's statement 'I also put in a type of my *Macrones chryseus*' (18 December 1876, ZMB.MS.). There is also a

hint of type status in the indication '*Sciaena glauca* sp. nov.' given in another list of specimens (2 December 1875, ZMB.MS.). On the whole, the paucity of Day species in Berlin (only 27 out of the three hundred or so he had by then described), coupled with hints in his letters, give the impression that Day was by now aware of the importance of keeping his types in a single collection, possibly as a result of his experience as a worker in museums and not just in the field.

Day's 47 letters to Peters, although usually brief and mainly concerned with taxonomic matters, are nevertheless an important source of biographical information, being in fact the largest single set of letters available to us (apart from the curt requests to Günther to examine British Museum material). They provide useful data on his visits abroad, on his move to Cheltenham, on his state of health, on the progress and dating of his books and, of perennial interest, on Günther's temper. Peters appears as an ever-willing colleague, prompt in his replies and as ready to count finrays and scales in a Bloch specimen as to supply a testimonial for the fisheries post that Day so coveted but never got (see p. 57). Day was fully aware of the demands that he made on Peters' time and on one occasion he stated frankly that 'I thought it best to dispatch a few [specimens] especially as I want something from you' (28 November 1875, ZMB.MS.). Considering the size of Day's collection, and the apparent warmth of his relationship with Peters, it is perhaps a little surprising that Berlin received under three hundred species of fishes whereas over eight hundred species went to Vienna, where Day's relationship with Steindachner seems hardly to have been so close (see below). However, the Vienna fishes were received in 1886–87, three years after Peters' death and they might perhaps otherwise have been destined for Berlin. There is also the fact that von Martens, who succeeded Peters as Director, was a close friend of Günther and may have sided with Günther during the various disputes, possibly to Day's knowledge.

The Berlin collection is a small one and the 27 possible types of Day species should be investigated with care.

g. *Rijksmuseum van Natuurlijke Historie, Leiden, 1875–80* (also Pieter Bleeker, 1865–77)

Day seems to have had a close relationship with Leiden, perhaps closer even than with Berlin. In a letter to Herman Schlegel (1804–84), then Director of the Museum, Day said that: 'During the last five years [i.e. since his return to England in 1874] I have not failed to visit your collection once or twice every season, and each time I go to Leiden I feel more and more pleased, not only with the great care taken with the specimens, but also with the facilities so courteously afforded to all biological students.' (18 February 1879, RMNH.MS.) Unfortunately, this appears to be the only extant letter from Day to Schlegel. There are also two letters from Day to Ambrosius Hubrecht, Curator of the fishes at Leiden, written in the same year (see below). At the time of Day's visits, the Museum was still on the very charming Rapenburg (see account in Gijzen, 1938), not moving to its present site on Raamsteeg until this century.

Only in the Schlegel letter is there any reference to specimens sent to Leiden, Day speaking of 'the several hundred species which I have been able to spare you from my own collection made within the limits of British India' (RMNH.MS.). However, an old notebook headed *Visschen verkregen door Ruil, aankop of Schenking* (Fishes acquired by exchange, purchase or gift), dated 1 June 1875–March 1886, and serially numbered 1–221, shows that Day sent 11 batches of specimens to Leiden, containing over five hundred fishes, between October 1875 and December 1879, at least 7 of these batches being exchanges, possibly all. The largest of these was a collection of 'about two hundred fishes' from Indian freshwaters, sent (or received) on 18 December 1877. In only 2 of the batches (May 1877 and 9 May 1878) are types indicated, making a total of 18, all except 2 being cyprinids:

Chatoessus modestus Moulmein
Clupea variegata Bassein
Barbus dubius Borraneh
Barbus carnaticus Canara
Barbus jerdoni Mangalore
Barbus lithopidos Canara
Barbus neilli Deccan
Barbus parrah Malabar
Barbus pinnauratus Canara
Barbus punctatus Cochin
Barbus thomasi Canara
Barbus wynaadensis Wynaad
Danio nigrofasciatus Burma
Labeo nigrescens Malabar
Labeo nigripinnis Sind
Labeo sindensis Sind
Scaphiodon brevidorsalis Borraneh
Scaphiodon watsoni Sind

There is also in Leiden a list of Day material entitled *Visschen van F. Day uit Magazin en Gallerij gerschonken in 1878–1882*, to which have been added *1875, 76, 77, 80*. This seems to have been drawn up in 1882 and to have been compiled from an old Register entitled *Visschen, Lyst van Spiritus exemplaren*, serially numbered from 1–9629. This list of Day fishes comprises 11 pages and gives 418 specimens or 412 species (but some listed twice). The first 271 names are preceded by the volume and page numbers from Günther's *Catalogue*, followed by the page and plate number in Day's *Fishes of India*, as well as the registered number and length of the fish in mm; the remaining 147 items are given a registered number, name, date (1875 to 1880) and locality. There is no indication of types, but 52 are shown as Day species in the first part of the list (2 in fact are Jerdon species) and a total of 71 Day species are actually represented in the entire list. The total number of specimens (418) is less than that given in total for the 11 batches in the notebook mentioned above (361 plus about two hundred freshwater fishes from India).

In two of his letters to Bleeker (see below), Day spoke of material sent to the Leiden museum. On the first occasion he was busy with the flatfishes for the *Fishes of India* and he said that he would be 'sending some specimens in a few days to the Leyden Museum', including *Synaptura commersoniana, S. albomaculata* and 'several species of *Cynoglossus* as *Bengalensis, oligolepis, puncticeps, brachyrhynchus, macrolepidotus, arel* ?, *dispar* ? new, and *lingua* from Calcutta which = *potous* I think' (1 December 1876, RMNH.MS.). He also sent at this time *Trichogaster fasciata* and *Ophiocephalus marulius*, but the latter was perhaps for Bleeker and not for the Museum since he asked Bleeker to compare it with *O. maruloides*

(1 December 1876, RMNH.MS). In another letter to Bleeker Day mentioned that he had sent a specimen of *Pleuronectes zebra* to Leiden and he also spoke of an enclosed list of fishes sent to Leiden (8 January 1877, RMNH.MS., but list not extant).

Yet another document in Leiden is a small notebook entitled *Visschen gegeven in Ruil* (Fishes given in exchange), apparently begun on 1 June 1875 and thus the counterpart of the notebook *Visschen verkregen* . . . mentioned above. The first 325 items are serially numbered, of which the first (only) was to Day, the remainder being unnumbered. These records show that in return for his donations, Day received from the Museum at least 9 batches of fishes, totalling 314 specimens, sent to him between September 1875 and June 1879 and often showing a fairly close one-to-one exchange basis. Many of these were specimens from the Indo-Australian Archipelago and would thus be those collected by Bleeker and sent to Leiden prior to the main purchase of Bleeker fishes (the A series, i.e. the types) at the Bleeker auction of December 1879. In his two letters to Hubrecht of June and July 1879, Day listed 22 species and 25 species which 'I brought from Leyden, the remainder (very few) next time' or 'had from you' (29 June and 6 July 1879, RMNH.MS.). It is not clear from this whether Hubrecht merely wanted to keep his records straight, or whether he was asking for the return of these specimens. The notebook shows that some 65 species (or specimens) were 'aan Day meegeven' on 9 May 1879, and these are evidently the species listed by Day to Hubrecht as 'brought from Leyden'. Possibly Day took them in a hurry and promised to list them on his arrival.

In addition to the specimens exchanged with the Leiden museum, Day appears to have given and exchanged a certain amount of material with Pieter Bleeker, then living at The Hague. From the acknowledgements made to Bleeker in both the *Fishes of Malabar* and the *Fishes of India*, as well as Day's frequent visits to the Netherlands, there is a strong impression that Day's relationship with Bleeker resembled that with Peters in Berlin; no doubt their very similar backgrounds contributed to this (see p. 5).

Day's gifts to Bleeker are poorly documented, but some indications occur in the 13 extant letters written to Bleeker between 1865 and 1877. In the first letter, undated but from the context probably May 1865, Day said that he had sent two new species of *Labeo* and that he was expecting 'more specimens of other species from India and shall do myself the honour of forwarding some for your acceptance' (undated, RMNH.MS.). In letters of 5 July and 13 August of the same year he again promised specimens. 'Should you be desirous of obtaining any further specimens of fish from India', he wrote, 'it would afford me great pleasure to send you (if I can procure them) what you require from that country.' (13 August 1865, RMNH.MS.) In 6 of the thirteen letters the following specimens are named as having been sent to Bleeker, 7 of them being species described by Day; of the latter, those sent in 1865 are the most likely to be types.

? May 1865	**Labeo* [*melanampyx fide* letter probably of June]
	**Labeo* [*denisonii* – as above]

* Species described by Day.

5 July 1865	*Caranx kurra*
	**Brachygramma* [probably *B. jerdonii*]
	**Perilampus* [probably *P. aurolineatus*]
	Catopra malabarica
	**Pseudobagrus chryseus* [implied from previous letter]
8 August 1875	*Andamia expansa* Andamans, coll. Day
1 December 1876	**Bregmaceros atripinnis*
	Gagata typus
	Pimelodus cenia
	Pseudecheneis sulcatus Darjeeling
	Glyptosternum striatum Himalayas
	Amblyceps mangois Himalayas
	Trichogaster fasciata
	Ophiocephalus marulius [or to Leiden museum]
8 January 1877	**Glyphidodon sindensis*
	Glyphidodon anabantoides [regrets that his *G. cochinensis* and *G. notatus*, as well as *Pomacentrus jerdoni* 'have gone back to Calcutta']
14 July 1877	*Hemirhamphus limbatus*
	Hemirhamphus indet.

These specimens would have formed part of Bleeker's collection and would thus have been amongst the material auctioned at his death. In Group VI of Bleeker's *Auction Catalogue* (Hubrecht, 1879 : 27), species No. 57 *Trichogaster fasciatus* is represented by a single specimen, surely that given by Day. Similarly, No. 83 *Pristolepis malabaricus* is a single specimen and thus the one sent as *Catopra malabarica* during the controversy with Günther (see below). The single *Pseudobagrus chryseus*, No. 94 in Group IX of the *Auction Catalogue*, must be the specimen sent by Day in 1865, while in Group XI, Nos 111 and 115 are evidently Day's specimens of *Labeo melanampyx* and *L. denisonii*. However, the final two Day species mentioned in the letters, *Bregmaceros atripinnis* and *Glyphidodon sindensis*, do not appear in the *Auction Catalogue*, although there is a single Bleeker specimen of the latter (RMNH.6476).

At least some of the material sent to Bleeker must have been in exchange. Evidence of this is seen in the number of Bleeker specimens included in the list of fishes shown at the International Fisheries Exhibition of 1883 and catalogued by Day (Day, 1883). These Bleeker fishes appear again in the list of material purchased by the Australian Museum (Anon., 1885, 1886), from which Whitley (1958) named 56 Bleeker types. However, it is now well established that the true Bleeker types were either amongst the A series of the *Auction Catalogue* (bought by Leiden) or else amongst seven of the nine lots (1786 species) bought by the British Museum between 1858 and 1880 (all but the first and last lots from Bleeker's personal collection – see Whitehead *et al.*, 1966). Day himself seems to have accepted certain of his Bleeker specimens as types, stating in the *Fishes of India*

* Species described by Day.

(Preface : vii) that Bleeker 'presented me with many of his types'. The Australian Museum evidently took Day's word for it, as in good faith did Whitley.

Other Bleeker specimens in Day's possession could have been included in any of the sales or donations made by Day after 1875 (India Museum, Calcutta, Berlin, ? Leiden, Florence, Vienna or the British Museum), but they are unlikely to have much importance. Some Bleeker specimens are indicated in the 'Register of Presentations' at the Zoological Survey in Calcutta (e.g. No. 376 *Gerres oyena*, No. 378 *Gerres poeti*), but these are given as 'from Bleeker', without reference to Day.

As with Peters, Day often sought Bleeker's advice. The first instance is in 1865 when he wrote : 'The late Sir John Richardson asked me to send to you the Catopra Malabarica for your opinion as to whether it is a badis or a Catopra.' (Undated, ? June 1865, RMNH.MS.) In July, Day sent a reminder, in the margin of which Bleeker wrote '*Nandus*' (5 July 1875, RMNH.MS.). Thanking Bleeker, Day stated that he had 're-examined the *Catopra Malabarica* (Günther) and also made a skeleton of one specimen' (13 August 1865, RMNH.MS.). One can well understand Day's sense of injustice at Günther's sneer 'as if he had ever seen a skeleton of *Catopra* !' (*Zoological Record*, 1866 : 141). Bleeker too was unfairly castigated in this same outburst (see above, p. 30) and it may be significant that in 1867 the hitherto fairly regular sale by Bleeker of type specimens to the British Museum ceased abruptly and that in this final batch the types were those of junior synonyms only (Whitehead *et al.*, 1966 : 10–12).

In March 1877 Bleeker negotiated with Schlegel for the disposal of his collection to the Leiden museum, but it was clear that no single institution could afford to buy it all. Hubrecht also conferred with Bleeker but it is not known to what extent the subsequent splitting of the collection was Hubrecht's idea. Day wrote to Schlegel urging that 'it would be a well deserved tribute to the memory of one of Holland's most zealous naturalists were the late Dr Bleeker's collections to find a resting place in the Leyden Museum' (18 February 1879, RMNH.MS.), and he told Hubrecht that he was 'glad Mrs Bleeker has had the good sense to place the division in your hands' (*c.* 6 July 1879, RMNH.MS.). Day himself had gone over to The Hague, having been asked to 'give an opinion on the value of poor Dr Bleeker's collections' (Day to Peters, 6 April 1878, ZMB.MS.), and it seems that he could not resist taking a few specimens for himself ; on his return he told Peters that he had 'obtained some of Bleeker's types from Hubrecht' (18 May 1878, ZMB.MS.).

h. *Muséum National d'Histoire Naturelle, Paris, 1875*

In Day's time, the Paris Museum was the most celebrated of all for its contributions to ichthyology through the works of Lacepède, Cuvier and Valenciennes. Not only was there the incentive for Day to examine their numerous types, but there were also fairly substantial collections of Indian fishes made by Dussumier, Leschenault and others. Day's letters imply that he visited once or even twice in 1875 (see above, p. 51) and he must surely have included Paris on his itinerary in subsequent years. Nevertheless, he made no mention of having sent specimens to Paris in his final letter to Günther (11 January 1889, BMNH.MS.G. **15**). There

is, however, a single letter in the Paris Museum archives, from Day to Léon Vaillant, in which he promised 'putting together some fishes for your splendid Museum but do not expect to send over any before June when I also hope to go with them to Paris' (1 March 1875, MNHN.MS.). The Museum register shows that Day presented at this time 26+22 specimens, of which 4+7 are possible types (respectively 5 June 1875 and 25 July 1876 in the *Catalogue*, the acquisition numbers being 287–311 and 428–448 bis).

i. *Museo di Fisica e Storia Naturale, Florence, 1880–84*

'At Florence, under the direction of Professor Giglioli, is one of the best arranged museums in Europe – the collections are in first-class order, and clearly and well exhibited.' Thus wrote Edward Ramsay (1885 : 31) after his tour of museums following the Fisheries Exhibition in London in 1883. Day seems to have shared this opinion and he donated a number of fishes to Florence. It is not clear if he ever visited the Museum himself, but when Enrico Giglioli (1845–1909) attended the 1882 Fisheries Exhibition in Edinburgh, he travelled back and stayed with Day at Cheltenham afterwards (Day to Bleeker, 26 April 1882, RMNH.MS.). They must have met again the next year when Giglioli was a delegate at the London Exhibition.

The Registers in Florence show that Day first presented a specimen in August 1880. Altogether, he made four donations, totalling 171 Indo-Pacific (mostly Indian) species (333 specimens) as well as 10 British species.

4 August 1880	No. 1276. *Scopelus* N. Atlantic
24 May 1881	No. 1481. 41 Indian species (45 specimens), 'tutti in alcool e in ottima condizione', all named. Of these, the following are Day species : *Psenes indicus* Madras (originally *Cubiceps*) *Cocotropus roseus* Madras *Pomacentrus sindensis* Sind (originally *Glyphidodon*)
24 December 1883	No. 1976. 27 Indian species (27 specimens), Bombay, Sind, Madras, mostly large and preserved dry. No list of species. Also, 57 Indian species (*c.* 212 specimens), Bombay, Sind, Madras, in alcohol. No list of species. Both lots were given by the Government of India through Day and were thus part of the 1883 Exhibition material.
5 November 1884	No. 2163. 9 British species (9 specimens), all named. Also, 46 Indian species (49 specimens), all named and with localities. Three species are indicated as types, and two more are Day species : *Scaphiodon microphthalma* Day (tipo !) Quetta *Scaphiodon irregularis* Day (tipo !) Afganistan *Danio neilgherriensis* Day (tipo !) Ootacamund *Semiplotus mcclellandi* Assam *Bregmaceros atripinnis* Bombay

Although the specimens recorded as donation No. 1976 of 24 December 1883 are not listed, it has been possible to retrieve the names of many of them from index cards to the main collection. Of those that can be recognized for certainty, there are 105 species (169 specimens in alcohol and 19 dry), of which 3 are possible types (labelled *Barbodes thomassi*, *Barilius evezardi* and *Mugil olivaceus*). A further 48 species are perhaps from this same batch (69 specimens, all in alcohol), including 6 possible types (labelled as *Acentrogobius neilli*, *A. melanosticta*, *A. griseus*, *Euctenogobius striatus*, *Boleophthalmus tenuis* and *Salarias steindachneri*).

Although in number of Day specimens rivalling Berlin, the Florence collection is not an important one and all but one of the Day species are found in other collections also. It is not clear why Day (or Giglioli) indicated only three as types. It should be noted that *Bregmaceros atripinnis* and *Semiplotus mcclellandi* are not from their type localities (Burma and Moulmein).

j. *Museo Civico di Storia Naturale, Genoa, 1880*

Another small collection of Day's fishes is in the Genoa museum. Altogether there are only 21 species (one specimen of each), of which none is a Day species. They seem to have been sent at the request of Decio Vinciguerra, who at that time was associated with the Museum and worked on its collections, although he did not become an official member of staff until forty years later (Vice-Director in 1921).

There are no Day letters at Genoa but, according to a file of manuscripts left by Vinciguerra, the Day specimens were received in 1880. In the Cheltenham material (Q 655) there is a single letter from Vinciguerra dated 5 January 1881 and beginning 'Je vous suis toujours très reconnaissant des poissons que vous m'avez envoyé et j'attends les autres que vous me promettez'. This suggests that Day sent further batches after 1880, but there is no record of this in the Registers.

A note in the card-file shows that three specimens of *Amblypharyngodon mola* from Burma (No. 17267) were sent to Day for identification and were later returned. This was presumably while Vinciguerra was working on the Burma fishes collected by Leonardo Fea (Vinciguerra, 1889).

k. *Australian Museum, Sydney, 1883*

The events which seem to have persuaded Day to sell his second-best collection to the Australian Museum in Sydney have been mentioned already (p. 82). Whether the decision of Jury 26 at the International Fisheries Exhibition really influenced Day's decision will probably never be known, but certainly it presented an ideal opportunity for the New South Wales representative, Edward Pierson Ramsay (1842–1917). Described by a contemporary as 'a man of most genial manners, kindness of heart, and possessing a rich vein of humour' (Etheridge, 1917: 217), Ramsay had already done much to enlarge the Australian Museum's collections, particularly in bird skins; the acquisition of the Day fishes was something of a triumph.

However, leaving aside Day's quarrel with Günther and Ramsay's genial nature, the choice of Sydney for Day's second collection is perhaps surprising. The Indian Museum, although small and only recently established, was at least concerned with

Indian fishes, while the major European museums surely deserved more than just the seven or eight hundred specimens hitherto dispersed in small batches (Berlin, Leiden, Florence and Genoa). Possibly, none of the larger museums was prepared to pay, having by now lost the chance to acquire Day's No. 1 collection, whereas the Australian Museum Trustees were evidently keen to back Ramsay's efforts. The Museum itself was by now fairly well established. In 1827, William Holmes had arrived in Sydney with a commission to collect and arrange zoological specimens for a proposed colonial museum, and with the help of the Rev. Charles Wilton a museum came into existence in Sydney and from 1836 was known by its modern name (Whitley, 1961 ; Etheridge, 1916). By 1849 the Museum was settled on its present site, on the corner of William and College Streets in the heart of Sydney, and in the 1860's the Main Building was constructed (Anderson, 1934).

Ramsay, who had been a Curator at the Australian Museum since 1874, was nominated Secretary in Charge of the Exhibits for the New South Wales Court at the 1883 International Fisheries Exhibition at South Kensington, where he collected for the Museum no less than six gold medals, five silver and one bronze, as well as a gold for himself. What he saw exhibited in the Indian Court, in addition to native fishing gear and collections sent from the three Indian Presidencies, was Day's personal collection comprising 809 freshwater and marine fishes. These were listed by Day (1883) in a *Catalogue of the Exhibits*, with the locality of each stated, as well as an indication of the type status in the case of Bleeker and Blyth specimens (but not for his own specimens). The Australian Museum purchased this Day collection for £200 and in its *Report* for 1884 (Anon., 1885 : 42–46) it acknowledged the acquisition of :

> Dr Day's private collection, as exhibited at the International Fisheries Exhibition, London, 1883. Specimens of fish from India and the Indian Ocean purchased from Deputy Surgeon-General Francis Day, F.L.S., F.Z.S., including duplicates of his type species and co-types from Dr Bleeker's collection. 'Co-type' signifies that the specimens were admitted by Dr Bleeker as identical with his types. 'Type', that these are certified to by Dr Day being part of his original collection, and named by him.

The species are then listed, with author and locality ; those that were considered types are set in capitals (with a few errors), the type status being given in parentheses. Altogether, 791 species are listed, of which 173 are shown as types, those of Day being 97, the remainder Bleeker and Blyth. In their *Report* for 1885 (Anon., 1886 : 1), the Trustees of the Museum recorded 'about 2,000 Indian Fishes from Dr Day' and on p. 5 the contents of a further two cases are listed, being 54 and 72 species, of which 3 and 14 were types, or 1 and 6 types of Day species. Thus, the grand total was 917 species (192 types, of which 104 were those of Day species.) Presumably, many of the species were represented by more than one specimen, thus doubling the total to the two thousand claimed. The collection was registered by James Ogilby in 1885.

Whitley (1958) continued the tradition of recognizing types amongst the Day and Bleeker specimens, for which he listed 121 for Day and 56 for Bleeker. The

justification for the extra 17 Day types was presumably that these represented Day species, the lack of such indication in the *Report* being merely an error. In our Table (p. 154) we have included 102 of those given by Whitley. The status of the Bleeker 'types' has been discussed above (p. 141), but it should be emphasized that even the *Report* does not claim for them the criteria that we now insist upon. Similarly, the Day 'types' are admitted to have been duplicates from 'his original collection', by which must be understood the collection that he sent back to Europe in 1872, with all the numerous additions made to species collected and described from 1865.

The status of the Blyth 'types' can only be determined by comparison with Blyth material in Calcutta.

1. *Naturhistorisches Museum, Vienna, 1886–87*

Day certainly met Franz Steindachner (1834–1919) in 1883 at the International Fisheries Exhibition in London, where Steindachner served on Jury No. 23, together with Giglioli, Ramsay and others. We have no record, however, of any visits by Day to Vienna. At this time the present museum building had not yet been formally opened (10 August 1889), although in 1886 the fish and reptile specimens were moved across from their seven small and dark rooms in the Imperial Cabinet on Josefsplatz (Scholler, 1958 : 38–39, also pl. 6 showing the former building – on fire in 1848). In 1887 Steindachner was appointed Director of the zoological collections, with a suite of rooms which nowadays houses the fish collections (Kähsbauer, 1959 – life and work of Steindachner).

Only four letters from Day to Steindachner can be found in the Museum archives, written in 1877 and 1886. The last of these letters is undated, but since it mentions a pilchard × herring hybrid 'lately obtained' this must be shortly after the discovery of the first such specimen in September 1885 and perhaps before the finding of a second specimen in December of that year (Day, 1886) ; since Steindachner is mentioned in the paper, which was received by the Zoological Society on 1 February 1886, this must be the latest date for the letter. On the subject of specimens, Day wrote,

> Thanks for your letter. I think nothing would be more in the interest of Ichthyology than my depositing the rest of my Indian collection of fish, and subsequently my British collection, including hybrids, in your Museum where they would be so well cared for, and have the superintendence of yourself, provided such could be arranged.
>
> I have no *Selache maxima* worth sending, my example was so badly skinned that it is in the stable ; while in this country skins of fish do not improve by keeping. My type of *Carcharias Ellioti* is 11 feet long and is *C. guentheri* of Murray recently described as new.
>
> As my skins of fish include Jerdon's collection, they occupy much space, and ought to be in some public institution.
>
> (? November 1886, NMV.MS.)

In the Annual Report of the Museum for 1886 acknowledgement is made of the presentation by Day of 1000 specimens (815 species), including some of Day's types and also 'types' which Day had received from Bleeker. It is not clear, however, whether the letter cited above refers to these specimens, or whether 'the rest of my Indian collection' meant the five thousand or so specimens that Day gave to the British Museum two years later ; certainly, the latter included Jerdon fish skins (see p. 150).

The list of Day specimens kindly prepared for us by Dr Paul Kähsbauer contains only 458 species (607 specimens). Of these, 74 are species described by Day (100 specimens) and these have been entered in our Table (p. 154). Among the specimens are 60 which have East Indian localities and were presumably those given to Day by Bleeker, amongst which are a number of Bleeker species, thus being the 'types' mentioned in the Annual Report. The discrepancy between what Steindachner claimed and what can now be found (a difference of about four hundred specimens or 357 species) is rather large. Steindachner may have exaggerated a little, but there must surely have been more material at one time.

Steindachner apparently received some fish skins from Day, including those from Jerdon's collection, but Dr Kähsbauer was not able to list any ; the collection of dry specimens in Vienna, however, presents quite formidable curatorial problems The type of *Carcharias ellioti* has not been located in any other collection, but Day may have had to throw it away.

Day's first letter to Steindachner, written early in 1877, asks Steindachner's help in identifying fishes from 'our mutual friend Stoliczka's Yarkand Collection', for which Day sent five of his plates and promised proofs of the text of his Report (Day, 1878) (9 January 1877, NMV.MS.). Day suspected that Steindachner's *Nemacheilus stoliczkae* and *N. temnicauda* were the same species ; he also sent plate 127 from the *Fishes of India*, asking if figure 4 was *Labeo stoliczkae* (now on pl. 135, fig. 1, thus plates probably renumbered as a result of additions after this date). Finally, Day asked for two large heads of *Silurus glanis*, for which he offered some Indian silurid specimens in exchange.

In his second letter, Day thanked Steindachner for agreeing to send the *Silurus glanis* and in exchange he spoke of 'about 30 species of *Siluridae* & *Cyprinidae* ready for you amongst which are *Semiplotus McClellandi*, *Labeo fimbriatus* Bloch, *L. kontius* Jerdon, *Cirrhina bata* H.B. *Labeo boggart*, Sykes, *L. pangnoia* H.B. *L. boga* H.B.' (15 July 1877, NMV.MS.). Of these, *S. mcclellandi* is a Day species, for which Day had given a new name, *S. stoliczkanus*, six years earlier (labelled as *mcclellandi* in the Vienna collections, NMV.54640).

Day's third letter to Steindachner (5 August 1877, NMV.MS.) thanks the latter for the specimens of *Siluris glanis* and includes a list of 22 species (23 specimens) just dispatched, of which *Apogon ellioti*, *Cocotropus roseus*, *Labeo nigripinnis* and *Scaphiodon watsoni* were Day species, but without indication of type status. These two collections add about fifty species to the total cited earlier for the 1886 collection, thus making Vienna the largest European collection of Day fishes to that date. It was only exceeded by the final collection to the British Museum.

m. *British Museum* (*Natural History*), *1888–89*

Concerning Day's final donation to the British Museum – the 'left-overs' one might say, albeit over five thousand of them – there is something of a mystery, for within the space of about a month Day seems to have made a complete *volte-face*. For eighteen years his specimens had gone to foreign institutions. Implicitly, or at times very explicitly, this distribution of specimens hinged on his quarrel with Günther. Yet at the close of 1888 Day appears suddenly to have relented and to have placed the remainder of his vast collection in Günther's hands.

As shown earlier, Günther's attacks in the 1809 and later issues of the *Zoological Record* probably provoked the scribbled comment 'No more fish to be sent to the BM. FD.' (Q 602). However, by 1875 and with the financing of the plates of the *Fishes of India* at stake, Day was apparently prepared to sell his No. 1 collection to the British Museum, although Owen's (? Günther's) disinterest probably then reinforced his determination to send his collections elsewhere. Henceforth, Day's fishes went to Harvard and Calcutta, to Berlin and Leiden, to Florence, Vienna and Sydney. More than half his collection, over six thousand fishes, including the figured specimens and many if not most of his types, went to other institutions, and if the Trustees of the British Museum were unaware of this loss to the national collection, it cannot have escaped Günther's notice.

So strongly did Day feel that even in November 1888 he was adamant that his bird specimens should not go to the British Museum. In a letter to Alfred Newton at Cambridge he said that, having been laid up for the past seven months and seeing no improvement, he felt it advisable to look for a home for his collection of Indian birds. He continued,

> I am deterred from giving them to the British Museum consequent on the numerous insults I have received there and from there and I will not send them to Florence before I know if they will be prized in this country.
>
> (18 November 1888, ZMC.MS.)

The birds were accepted by Cambridge and were dispatched, but only a few weeks later Day apparently swallowed his pride. It would be of great interest to know how he made the initial offer and to whom it was addressed, whether to Günther himself or whether to William Flower (1831–99), now the Director of the British Museum (Natural History).*

The first intimation that we have found to the donation of Day's fishes to the British Museum is in Günther's last letter to Day, written on 10 January 1889 (BMNH.MS.G. **15**), in which he says that 'the conveyance of your specimens was effected without mishap; I myself will undertake the selection of specimens; in fact I have commenced this work today'. This would appear to have been Günther's first acknowledgement of receipt of the collection, which suggests that it may only have arrived early in the new year. A fortnight later, Günther

* At a Committee meeting on 24 July 1880, Edward Bond, the Principal Librarian, endorsed an order that 'the designation of the Museum . . . be expressed in writing thus: British Museum (Natural History)' (BMNH.MS.Doc. **1** : 41). Even after the move to South Kensington, Richard Owen had been known as Superintendent of the Natural History Departments; Flower succeeded him in 1884 and was the first to be termed Director.

officially reported Day's presentation of 'a very large and valuable collection of Indian and British Fishes and Crustaceans' of which 'The Indian series comprises about 1500 specimens . . .' (23 January 1889, BMNH.MS.Doc. **11** : 13). He added,

> Dr Günther begs leave to recommend to the Trustees that they should order a special letter of thanks to be written to Mr Day for his valuable donation.

The official acknowledgement was probably a letter written to Day by Flower, to which Day replied apologizing for not answering sooner (18 February 1889, BMNH.MS.Z.). In this letter Day referred to yet another of his collections, saying that his fish 'at the Science and Art Dept. S.K. are in the Buckland Museum' ; presumably these were British fishes illustrating Buckland's former fish culture and fisheries exhibits. In the same letter Day enquired about the Madras Museum specimens sent in error to the British Museum (see above, p. 130). Answering Flower's reply to this letter, Day thanked him for finding the missing *Gobius thurstoni* type and expressed himself 'most obliged for being informed of the number of specimens Mr Boulenger has labelled, many I fear are not in a good state' (7 March 1889, BMNH.MS.Z.). He had earlier emphasized the poor condition of some of the fishes in his letter to Günther, pointing out that 'Many fish are bad as every jar was taken and some I have not seen for 18 months. . . . Some have the wrong names of species on them but the right name of the locality from whence they came. The original species having been removed.' (11 January 1889, BMNH.MS.G. **15**.) According to Günther's letter of 10 January, 'Gerrard of course has communicated to me all the information you have given him', which suggests that there were lists or instructions sent with the boxes of specimens.

Day had apparently had his shelves cleared and since the best had long since gone, there must have been much that was of little interest to the Museum. Günther pointed this out and offered to dispose of material to other museums (Edinburgh was suggested), although he promised to preserve 'everything of historical or intrinsic value' (10 January 1889, BMNH.MS.G. **15**) ; Day readily agreed to any such division (11 January 1889, loc. cit.). In the Accession Register at the end of the Day donation there is a note stating : 'The number of duplicate specimens of Indian Fishes made up into five sets, for exchange, is 1876.' Of these, 558 fishes went to Leningrad and 462 to Chicago (see below).

The Day fishes did not all arrive at once. Those that were acknowledged on 23 January (about fifteen hundred Indian fishes plus some British) were perhaps the first of several batches, of which one other is recorded (unsigned postcard announcing dispatch of a box from Cheltenham, 10 April 1889, BMNH.MS.Z.). The bulk of the collection was registered together, ostensibly on 1 February 1889, but this must have been the date registration started since there were 4849 fishes (and 15 reptiles and 3 amphibians) and the task of listing, labelling and bottling this would have taken some weeks.

A small batch (26 fishes, all Indian except a Bleeker clupeoid and 2 *Rhodeus*) was subsequently registered in August of that year. This batch is of interest because it includes *Apogon thurstoni* and *Acanthoclinus indicus*, both of which are indicated as types. The first, and possibly the second also, are Madras Museum

specimens borrowed from Thurston and never returned (see above, p. 130). They are also among the few Day types indicated as such in the Register (also indicated are *Schizothorax irregularis* and *Ptychobarbus longiceps* in the February collection).

A final batch (10 fishes, all British) was registered in December 1892; possibly these had been found when Kenilworth House was being packed up.

The Accession Register shows 4849+26+10=4885 Day fishes, of which 4398 were Indian (161 as skins) and 487 European, etc. Of the Indian fishes we have found 115 of the 328 species described by Day. These have been added to our Table of possible types (p. 154), but we have excluded 24, being those already represented in Day's material acquired in 1865–70, or those whose locality clearly differs from that in the original description.

The 161 skins listed in the Accession Register (including the possible types of 31 Day species) were not incorporated into the general collections but for some reason remained in their box (and appear to have been virtually ignored ever since). In fact, there were four more boxes of Day's fish skins, but Günther seems to have given up at this point and they were never registered. They contain 981 specimens, among which 25 Day species are included (these have now been registered, but not the remainder); as with other specimens from this 1888–89 collection, we have included possible types in our Table. These fish skins are of considerable interest because they represent some of Day's earliest collections (1858–68) from Cochin, Ootacamund, Kurnool and Madras. A few are loose, but most are sewn onto cards, usually with a name (some renamed) and many with locality and/or date and occasionally some comment on colour or provenance; for the cyprinids, the pharyngeal teeth are often mounted beside the fish.

A few of these skins are labelled 'from Jerdon's Collection', thus bearing out Day's claim to Steindachner that 'my skins of fish include Jerdon's collection' (? November 1886, NMV.MS., see p. 146 above; also, note in Eg. 11 – see p. 49). Several specimens are marked 'From Sir W. Elliot' or 'Sir W. Elliot's Collec. Madras'. One of these, an unregistered fish labelled *Diagramma poicilopterum*, is mounted in a box which bears the label 'Francis Day Esq. Hartland House Kings Road', where Day was living at the time of his visit to Elliot in December 1874 (see p. 110 above). This specimen is also labelled 'Jerdon's specimen' and 'see coloured figure', which seems to indicate that Elliot acquired some of Jerdon's specimens and perhaps used them for his own illustrations; alternatively, this was a fish drawn by Jerdon. Yet another specimen, a flyingfish, is stated to have been from Jonathan Couch's collection. Since Day apparently borrowed Couch's manuscript *Journals*, transcribing them for a series in *Land and Water* (and keeping two of them – Q 648), he may have had other Couch fishes.

In spite of their condition, these skins may well rank as high as Day's 1864–70 collections to the British Museum since many were among the original specimens collected and may have been used in the description of species (this is even more likely in the frequent cases where finray and scale counts are written on the cards). Of biographical interest, it can be noted that 94 of the smaller cards are visiting cards and thus show the people who called on the Day household at about the time that the specimens were collected.

There is no published catalogue of the fish types in the British Museum, but a working list is kept (loose-leaf, arranged by generic number). With a collection as old, complex and large as this, the type indications are often wrong and conversely, a number of genuine types have been missed. This has already been demonstrated for the Bleeker material (Whitehead *et al.*, 1966) and the same is true of the Day types. Obvious errors in the latter have now been set to rights, but only revisionary work can truly establish the status of many.

n. *Zoological Museum, Leningrad, 1889*

In 1889 this Museum received 558 specimens (284 species) of Indian fishes culled from Day's final collection given to the British Museum. In the Leningrad register these are listed as Nos 8101–8384. All are named, with author, locality and number of specimens. Included are representatives of 19 species described by Day and these have been added to our Table (p. 154).

o. *Field Museum of Natural History, Chicago, 1899*

Long after Day's final collection to the British Museum had been incorporated, Boulenger wrote to the Field Museum in Chicago offering 452 Day specimens from India (182 species), together with 53 other fishes from Karachi and the Persian Gulf and 104 snakes and lizards from the East Indies; he enclosed a list and said that these were in exchange for specimens he had received from Chicago (2 February 1899, Field Museum archives). The list gives the name of the species and the locality, and 15 of the species described by Day are included (see our Table, p. 154). This material was accepted and incorporated on 17 March.

Other institutions, 1888–89

According to the note in the British Museum Acquisition Register (see above, p. 00), duplicates of Day's Indian fishes were sorted into five lots, totalling 1876 specimens. No record of the other institutions has been found (BMNH.MS.Z., BMNH.MS.Doc.) beyond Günther's suggestion of Edinburgh in his letter to Day. There is no mention of Day fishes for 1889 in the Registers of the Royal Scottish Museum in Edinburgh, although 173 British fishes were received from Day in 1882. Edinburgh received fishes from the British Museum, but these were incorporated much earlier (1882, 1883, 1886). Thus, 866 specimens are unaccounted for. Some of these will have been specimens of Day species, but almost certainly they would have repeated those already given to Leningrad and Chicago.

TYPES OF DAY'S SPECIES

As we have shown, Day gave or sold Indian fishes to twelve different institutions, while a further five museums received Day specimens after his death. All but one recorded institution (Genoa) possess representatives of the species he described and the problem remains as to which he truly gave his types. One criterion should obviously be Day's own indications, although like Bleeker and others of that period Day does not always seem to have held undue reverence for the actual specimens

on which a description was founded. Sometimes he noted the fact, as for example with the two specimens of *Silurus punctatus* sent to the British Museum, which he said were part basis for his description (Day's list of 10 March 1868, see p. 128). In the same list, as well as on other occasions, he simply wrote 'typical' and it was probably on such indications that museum curators wrote 'type' in their registers (e.g. Calcutta, Florence and Leiden). To Peters he promised 'some types of my Indian species' (22 August 1875, ZMB.MS.). On the other hand, the 'types' received by the Australian Museum were merely those 'certified to by Day being part of his original collection, and named by him' (Anon., 1885 : 42). This, and the reference to types and typical specimens cited in the letters, suggest that Day considered as typical any specimens vouched for by himself as being the species that he described. This is borne out also by the criterion that Day seems to have applied in recognizing Bleeker types amongst his own material, at least to judge by the Australian Museum's acceptance of them as such.

The only modern criterion for Day's types is recognition of those undoubtedly used in the original descriptions, but this is not always easy. Bleeker almost invariably recorded total length (in mm), but Day often omitted size or gave an approximate maximum (in inches). Another indication is the locality, which is usually stated. As we have shown for Day's clupeoid species (Talwar & Whitehead, 1971), recognition of Day types is as full of pitfalls as it is for Bleeker material (Whitehead *et al.*, 1966) ; thus, the possible type material for *Spratelloides malabaricus* contains members of two outwardly extremely similar species of different genera.

We began this study with the statement that Day considered the British Museum as a minor repository of his types. If one were to grade the various Day collections in order of importance, the report in *Nature* (Anon., 1889) offers a clue.

> The Imperial Museum at Calcutta possesses his type collection of Indian fishes ; and collections formed by him are in the Natural History Museums at Leyden, Berlin, Florence and Sydney, and in the British Museum. . . .

This information was provided by Day himself and it is confirmed in his last letter to Günther.

> My type collection of Indian fishes went to Calcutta, No 2 to Sydney, No 3 to Vienna, and Florence, Berlin and Leyden have had large numbers.
>
> (11 January 1889, BMNH.MS.G. **15**)

This letter was written at the time that Day was sending his final batch, some five thousand specimens but nonetheless his left-overs, to the British Museum. It was six years since the Australian Museum purchase and ten years since he dispatched his figured specimens to Calcutta. Thus, apart from the material sent to the British Museum up to 1870, what Günther received in 1888–89 was in Day's estimate No. 4 or lower in importance. As in the case of the Australian Museum collections, however, a number of the British Museum specimens have later been considered types in a manner that amounts to a tacit nomination of lectotypes. It would not be in the interests of stability to question this status except on the grounds of conflict between specimen and original description or figure.

In our Table (p. 154) we have listed possible types for the 328 species described by Day. It must be emphasized that these in no way represent syntypical series ; they are merely all those representatives of the species that cannot or have not been excluded *prima facie*. In many cases the locality has not been taken into consideration, nor the date of presentation or sale. Thus, each species must be investigated carefully if the rather stringent rules of nomenclature are to be followed and we cannot too strongly recommend that type designations are only attempted during revisional studies.

Our Table shows that no type specimens can be found for 65 Day species (excluding replacement names). For 7 of these the description was based solely on a Tickell (or Haly) description. Of the remainder, possible type material for 34 species was lost or destroyed in the Zoological Survey collections (the losses presumably mainly occurred in the flood at Benares—see p. 134). Possible types of a further 3 species were apparently in the Colombo Museum in Sri Lanka but cannot now be found, as also 1 in Paris. We have no information for the remaining species, although some may have been lost at the Madras Museum (see p. 130) and others may be among the dry specimens sent to Vienna and not yet found (see p. 147). In many cases the designation of neotypes is probably justified, although a further investigation is always advisable.

Finally, it is of interest to compare the total number of species in each institution for which possible types have been found.

Calcutta	248	Leningrad	19
British Museum	152	Chicago	15
Sydney	102	Florence	15
Leiden	74	Paris	11
Vienna	73	Harvard	10
Berlin	27		

Calcutta is clearly the most important, and additionally so because many of the specimens were figured. The British Museum appears to be next, but this is only because of the large number included in the 1889 donation. It should be remembered that many species had by that time been described for some twenty years and the addition of subsequent specimens would often be highly likely. Discounting the British Museum, Sydney comes next, followed by Leiden and Vienna and then Berlin. This agrees quite closely with Day's own estimate of importance and should be taken into account in the selection of lectotypes where a series exists in several institutions.

TABLE OF NEW GENERA AND SPECIES DESCRIBED BY FRANCIS DAY, WITH REGISTERED NUMBERS FOR POSSIBLE TYPE SPECIMENS IN ELEVEN INSTITUTIONS

The specimens for each particular species are not intended to represent syntypical series but are those which have not yet been excluded from consideration by reason of locality, date, etc., although further investigation may warrant it. The index should be used in conjunction with this list since a number of clues to type status are given in the text.

Key: † figured specimen in Calcutta * dry specimen ( ) lost or destroyed.

NEW GENERA

ACANTHONOTUS Day, 1888, *Fishes of India, Suppl.* : 807 (Type: *Acanthonotus argenteus* Day, 1888)
AILIICHTHYS Day, 1871, *Proc. zool. Soc. Lond.* : 712 (Type: *Ailiichthys punctata* Day, 1871)
APOCRYPTICHTHYS Day, 1876, *Fishes of India* : 302 (Type: *Apocryptes cantoris* Day, 1870)
BRACHYGRAMMA Day, 1865, *Proc. zool. Soc. Lond.* : 304 (Type: *Brachygramma jerdoni* Day, 1865)
GOGRIUS Day, 1867, *Proc. zool. Soc. Lond.* : 563 (Type: *Gogrius sykesii* Day, 1867)
JERDONIA Day, 1870, *Proc. zool. Soc. Lond.* : 700 (Type: *Platacanthus maculatus* Day, 1867)
MATSYA Day, 1889, *Fauna Brit. India, Fishes*, **1** : 292 (Type: as for *Acanthonotus*, preoccupied by Bloch & Schneider, 1801)
MAYOA Day, 1869, *Proc. zool. Soc. Lond.* : 553 (Type: *Mayoa modesta* Day, 1869)
NANGRA Day, 1877, *Fishes of India* : 493 (Type: *Pimelodus nangra* Hamilton-Buchanan, 1822)
NEMACHILICHTHYS Day, 1878, *Fishes of India* : 611 (Type: *Cobitis ruppelli* Sykes, 1839)
PARANANDUS Day, 1865, *Fishes of Malabar* : 130 (Type: *Catopra malabarica* Günther, 1864)
PLATACANTHUS Day, 1865, *Fishes of Malabar* : 204 (Type: *Platacanthus agrensis* Day, 1865)
PRIACANTHICHTHYS Day, 1868, *Proc. zool. Soc. Lond.* : 193 (Type: *Priacanthichthys madraspatensis* Day, 1868)
PSEUDOSYNANCEIA Day, 1876, *Fishes of India* : 163 (Type: *Pseudosynanceia melanostoma* Day, 1876)

		Calcutta	London	Sydney	Vienna	Berlin	Leiden	Florence	Leningrad	Chicago	Harvard	Paris
CHONDRICHTHYES												
CARCHARINIDAE												
1. *balfouri* (*Hemigaleus*)	1878, *Fishes of India* : 717, pl. 185 (4) (Waltair)	(3169†)	—	—	—	—	—	—	—	—	—	—
2. *ellioti* (*Carcharias*)	1878, *Fishes of India* : 716, pl. 189 (2) (Kurrachee)	(2773*)	—	—	—	—	—	—	—	—	—	—
3. *malabaricus* (*Carcharias*)	1873, *J. Linn. Soc. Lond.* **11** : 529 (Paliport, Calicut)	—	—	I 61	—	—	—	—	—	—	—	—
4. *obtusus* (*Triaenodon*)	1878, *Fishes of India* : 720, pl. 189 (3) (Kurrachee)	2277*†	—	—	—	—	—	—	—	—	—	—
5. *tricuspidatus* (*Carcharias*)	1878, *Fishes of India* : 713, pl. 186 (1) (Sind)	(2772*)	1889.2.1.4373 (jaws)	—	—	—	—	—	—	—	—	—
OSTEICHTHYES												
ANGUILLIDAE												
6. *malabaricus* (*Leptocephalus*)	1865, *Proc. zool. Soc. Lond.* : 308 (Cochin)	—	—	—	—	—	—	—	—	—	—	—
MURAENIDAE												
7. *nigra* (*Muraena*) [*non Muraena nigra* Risso, 1810]	1870, *Proc. zool. Soc. Lond.* : 702 (Port Blair)	2644†	—	—	—	—	—	—	—	—	—	—
OPHICHTHIDAE												
8. *microcephalus* (*Ophichthys*)	1878, *Fishes of India* : 665, pl. 170 (2) (Malabar)	2759†	—	B 7843	—	—	—	—	—	—	—	—
NETTASTOMATIDAE												
9. *petersi* (*Saurenchelys*)	1878, *Fishes of India* : 663, pl. 168 (6) (Orissa)	2501†	—	—	—	—	—	—	—	—	—	—
CLUPEIDAE												
10. *malabaricus* (*Spratelloides*)	1873, *Proc. zool. Soc. Lond.* : 240 (Malabar coast)	2246†	1889.2.1.2048	B 8288	4558	10413	2726	—	8220	2379	—	—
11. *modestus* (*Chatoessus*)	1869, *Proc. zool. Soc. Lond.* : 622 (Bassein R.)	2695†, (A 1007 – 2 ex.)	1889.2.1.1879	B 7637	—	—	2585	—	—	—	—	—
12. *sindensis* (*Clupea*)	1878, *Fishes of India* : 638, pl. 163 (2) (Kurrachee)	2630†, 2614	1889.2.1.1919–24	B 7642	—	—	2519	—	—	—	—	—
13. *sladeni* (*Pellona*)	1869, *Proc. zool. Soc. Lond.* : 623 (Irrawaddi R. at Mandalay)	2672†, B 298	1870.6.14.36	—	—	—	—	—	—	—	—	—
14. *variegata* (*Clupea*)	1869, *Proc. zool. Soc. Lond.* : 623 (Irrawaddi R.)	2245†, B 43, B 168, ? A 1020	1870.6.14.38	B 7676	—	—	2586	—	—	—	—	—
ENGRAULIDAE												
15. *auratus* (*Engraulis*)	1865, *Fishes of Malabar* : 238, pl. 19 (2) (Cochin)	—	1867.5.30.13, 1889.2.1.1779–80, 1889.2.1.4855*, 1975.9.30.14*	—	—	10412	—	—	—	—	—	—
GALAXIIDAE (doubtful, *fide* McDowall, 1973)												
16. *indicus* (*Galaxias*)	1888, *Fishes of India, Suppl.* : 806, fig. (Bengal, Madras)	—	—	—	—	—	—	—	—	—	—	—
SYNODONTIDAE												
17. *indicus* (*Saurus*)	1873, *J. Linn. Soc. Lond.* **11** : 526 (Madras)	2337	—	B 7672	—	—	2761	—	—	—	—	—

		Calcutta	London	Sydney	Vienna	Berlin	Leiden	Florence	Leningrad	Chicago	Harvard	Paris
MYCTOPHIDAE												
18. *indicus* (*Scopelus*)	1877, *Fishes of India* : 507, pl. 118 (2) (Vizagapatnam)	1337†	1889.2.1.2232–4	—	—	—	—	—	—	—	—	—
CYPRINIDAE												
19. *ambassis* (*Barbus*)	1868, *Proc. zool. Soc. Lond.* : 583 (Kurnool)	(A 788)	1889.2.1.681–5	B 7553	53688–9	11125 (2 ex.)	2686	—	—	—	—	—
20. *argentea* (*Chela*)	1867, *Proc. zool. Soc. Lond.* : 301 (Bowany R.)	2627, A 917, (2545, A 918)	1867.7.24.44–7	B 7881	—	—	2670	—	8262 (2 ex.)	2348 (2 ex.)	—	—
21. *argenteus* (*Acanthonotus*)	1888, *Fishes of India, Suppl.* : 807 (Tenasserim)	—	—	—	—	—	—	—	—	—	—	—
22. *arenatus* (*Barbus*)	1878, *Fishes of India* : 574, pl. 142 (7) (Madras)	2737†	—	B 7906	—	—	—	—	—	—	—	—
23. *alta* (*Garra*)	1867, *Proc. zool. Soc. Lond.* : 349 (Wynaad)	—	—	—	—	—	—	—	—	—	—	—
24. *aurolineatus* (*Perilampus*)	1865, *Proc. zool. Soc. Lond.* : 306 (Cochin)	—	1865.7.17.19–20	—	—	—	8710, 8723	—	—	—	—	—
25. *bakeri* (*Barilius*)	1865, *Proc. zool. Soc. Lond.* : 305 (Travancore, Cochin)	2417	1889.2.1.1108–9	B 7916	50980	—	—	—	—	—	—	—
26. *bakeri* (*Rohtee*)	1873, *Proc. zool. Soc. Lond.* : 240 (Cottayam)	2701†	—	—	—	—	—	—	—	—	—	—
27. *bleekeri* (*Barilius* [*Pachystomus*])	1872, *J. Asiat. Soc. Bengal* **41** (2) : 5 (Gangrete)	—	—	—	—	—	—	—	—	—	—	—
28. *blythii* (*Barbus* [*Barbodes*])	1869, *Proc. zool. Soc. Lond.* : 555 (Tenasserim Prov.)	A 787	—	—	—	—	—	—	—	—	—	—
29. *boopis* (*Chela*)	1873, *Proc. zool. Soc. Lond.* : 708 (S. Canara)	2542, 2625, A 937	1889.2.1.1411–12	B 7820	—	—	2703	—	—	—	—	—
30. *bovanicus* (*Barbus*)	1878, *Fishes of India* : 566, pl. 138 (1) (Bowany R.)	2384	1889.2.1.549–50	B 7829	53946	—	—	—	—	—	—	—
31. *brevidorsalis* (*Semiplotus*)	1873, *Proc. zool. Soc. Lond.* : 239 (Neilgherry Hills)	—	—	B 7808	51643–4	11043	2632	—	—	—	—	—
32. *burmanica* (*Dangila*)	1877, *Fishes of India* : 546, pl. 131 (2) (Moulmein, Tavoy)	—	—	B 7854	—	—	—	—	—	—	—	—
33. *burmanicus* (*Barbus*)	1878, *Fishes of India* : 572, pl. 141 (4) (Mergui)	—	—	B 7898	53977	—	—	—	—	—	—	—
34. *caeruleus* (*Labeo*)	1877, *Fishes of India* : 540, pl. 129 (3) (Sind)	—	—	—	—	—	—	—	—	—	—	—
35. *compressus* (*Barbus* [*Barbodes*])	1869, *Proc. zool. Soc. Lond.* : 555 (? Kashmir)	A 786	—	—	—	—	—	—	—	—	—	—
36. *cumma* (*Rohtee*)	1888, *Fishes of India, Suppl.* : 807 (Moulmein)	—	—	—	—	—	—	—	—	—	—	—
37. *denisonii* (*Labeo*)	1865, *Proc. zool. Soc. Lond.* : 299 (Mundikyum)	2308†, 2371	1864.7.9.6	B 7913	—	—	4950	—	—	2359 (2 ex.)	—	—
38. *dobsoni* (*Barbus* [*Barbodes*])	1876, *J. Linn. Soc. Lond.* **12** : 574 (Deccan)	2726† (2 ex.)	1889.2.1.566–7	—	54058–9	—	2659	—	—	—	—	—
39. *dubius* (*Puntius* [*Barbodes*])	1867, *Proc. zool. Soc. Lond.* : 291 (Bowany R.)	(2378†)	1889.2.1.4338*	B 7806	—	—	2633	—	—	—	4292	—
40. *dukai* (*Barbus*)	1878, *Fishes of India* : 564, pl. 143 (3) (Teesta R. at Darjeeling)	2388	1889.2.1.518–19	B 7893	54061	—	2681	—	—	—	—	—
41. *elegans* (*Paradanio*)	1867, *Proc. zool. Soc. Lond.* : 297 (Bowany R.)	—	1867.7.24.2–3	—	—	—	—	—	—	—	—	—
42. *evezardi* (*Barilius*)	1872, *J. Asiat. Soc. Bengal* **41** (2) : 326 (Puna)	—	1889.2.1.1203	B 7895	54871	11145	2671	(? lost)	—	—	—	—
43. *gravi* (*Barbus*)	1867, *Proc. zool. Soc. Lond.* : 293 (Bowany R., Kullaar R.)	—	1867.7.7.24.19–21	—	—	—	—	—	—	—	—	—
44. *guentheri* (*Barbus*)	1868, *Proc. zool. Soc. Lond.* : 582 (Kurnool)	—	1868.10.27.23–4	—	—	—	—	—	—	—	—	—
45. *guttatus* (*Opsarius*)	1869, *Proc. zool. Soc. Lond.* : 620 (Prome to Mandalay)	2221†, A 887	1889.2.1.1157	B 8224	54875–6	—	—	—	—	—	—	—
46. *himalayanus* (*Barbus* [*Barbodes*])	1872, *J. Asiat. Soc. Bengal* **41** (2) : 325 (Ussun R., nr Simla)	(2727†)	—	—	—	—	—	—	—	—	—	—
47. *innominatus* (*Barbus* [*Barbodes*])	1869, *Proc. zool. Soc. Lond.* : 556 (Ceylon)	(A 792 – 2 ex.)	—	—	—	—	—	—	—	—	—	—
48. *interrupta* (*Barilius*)	1869, *Proc. zool. Soc. Lond.* : 559 (Hotha)	(A 880 – 59 ex.)	1889.2.1.1213–15	B 7745	54877	—	—	—	—	—	—	—
49. *irregularis* (*Scaphiodon*)	1872, *J. Asiat. Soc. Bengal* **41** (2) : 324 (Sind Hills)	(2595)	1889.2.1.380–4	B 7883	—	—	4639	2373	—	—	—	—
50. *irregularis* (*Schizothorax*)	1876, *Proc. zool. Soc. Lond.* : 787 (Tash-kurgan)	(3202*†)	1889.2.1.4380*	—	—	—	—	—	—	—	—	—
51. *jerdoni* (*Barbus* [*Barbodes*])	1870, *Proc. zool. Soc. Lond.* : 372 (Mangalore)	(2373, 2383†)	1889.2.1.568	B 7935	—	—	2645	—	—	—	4282	—
52. *jerdoni* (*Brachygramma*)	1865, *Proc. zool. Soc. Lond.* : 304 (Cochin)	—	1865.7.17.3–4, 1889.2.1.4365*	—	—	—	8702	—	—	—	—	—
53. *jerdoni* (*Garra*)	1867, *Proc. zool. Soc. Lond.* : 288 (Seegor R., Bowany R.)	1507†	1867.7.24.30, 1975.9.30.5*	B 7677	—	—	—	—	—	—	—	—
54. *laticeps* (*Ptychobarbus*)	1876, *Proc. zool. Soc. Lond.* : 789 (Kashgar)	(3187*†)	—	—	—	—	—	—	—	—	—	—
55. *lepidus* (*Puntius* [*Capoeta*])	1868, *Proc. zool. Soc. Lond.* : 196 (Bowany R. at Mettapoliam)	(A 791 – 2 ex.)	1868.10.27.22	—	—	—	—	—	—	—	4299	—
56. *lineatus* (*Danio*)	1868, *Proc. zool. Soc. Lond.* : 198 (Ennore, nr Madras)	—	1868.10.27.51–3, 1975.9.30.1*	—	—	—	—	—	—	—	—	—
57. *lithopidos* (*Barbus*)	1873, *Proc. zool. Soc. Lond.* : 708 (S. Canara)	2392, (2370, 2381†), A 785	1889.2.1.554–61	—	54256–8	11055	2637, 2654	—	8217 (2 ex.)	2316 (2 ex.)	—	—
58. *longiceps* (*Ptychobarbus*)	1876, *Proc. zool. Soc. Lond.* : 790 (Yarkand)	(3188*†)	1889.2.1.4382*	—	—	—	—	—	—	—	—	—
59. *maderaspatensis* (*Esomus* [*Nuria*])	1867, *Proc. zool. Soc. Lond.* : 300 (Bowany R.)	—	—	—	—	—	—	—	—	—	—	—
60. *malabarica* (*Garra*)	1865, *Proc. zool. Soc. Lond.* : 297 (Kurriavanoor R.)	—	1865.7.17.14, 1975.9.30.6*	—	—	—	—	—	—	—	—	—
61. *malabaricus* (*Esomus*)	1867, *Proc. zool. Soc. Lond.* : 299 (Trichoor)	(2450†)	1889.2.1.4359–60*, 1975.9.30.11*	—	—	11131	—	—	—	—	—	—
62. *malabaricus* (*Osteochilus*)	1873, *J. Linn. Soc. Lond.* **11** : 527 (Wynaad)	—	1889.2.1.579–83	—	—	—	—	—	—	—	—	—
63. *mcclellandi* (*Barbus* (see also *stoliczkanus*, nom. nov.)	1869, *Proc. zool. Soc. Lond.* : 619 (Pegu, Moulmein)	2298†, (A 789–90 – 2 ex.)	1889.2.1.850–2	B 7741–3, B 7542	54640	—	—	—	—	—	—	—
64. *melanampyx* (*Labeo*)	1865, *Proc. zool. Soc. Lond.* : 298 (Mundikyum)	2719	1864.7.9.7, 1975.9.30.2–3*	B 7556	54366–8	—	2720, 4948, 8671	—	—	—	—	—
65. *melanostigma* (*Barbus*)	1878, *Fishes of India* : 573, pl. 143 (1) (Wynaad)	—	1889.2.1.635–7	—	54360	—	—	—	—	—	—	—
66. *microcephalus* (*Schizothorax*)	1876, *Proc. zool. Soc. Lond.* : 787 (Panja)	(3200*†)	—	—	—	—	—	—	—	—	—	—

			Calcutta	London	Sydney	Vienna	Berlin	Leiden	Florence	Leningrad	Chicago	Harvard	Paris
67.	*microphthalmus* (*Labeo*)	1877, *Fishes of India* : 542, pl. 132 (4) (Himalayas)	—	? 1889.2.1.208–18	B 7666	{5350–1, 55897	—	—	—	8167 (3 ex.)	2296 (2 ex.)	—	—
68.	*microphthalmus* (*Scaphiodon*)	1880, *Proc. zool. Soc.Lond.* : 227 (Quetta)	—	—	—	—	—	—	(lost)	—	—	—	—
69.	*modesta* (*Mayoa*)	1869, *Proc. zool. Soc. Lond.* : 553 (N. India)	1426†, (A 710a)	—	—	54882–3	—	—	—	—	—	—	—
70.	*modestus* (*Barilius* [*Pachystomus*])	1872, *J. Asiat. Soc. Bengal* **41** (2) : 4 (Ravi R. at Lahore)	2424	{1889.2.1.1028–37 and 1185–90	B 7884–5	—	—	2709	—	8326 (2 ex.)	—	—	—
71.	*modestus* (*Semiplotus*)	1870, *Proc. zool. Soc. Lond.* : 101 (nr Akyab in Burma)	2343	—	—	—	—	—	—	—	—	—	—
72.	*nashii* (*Barbus*)	1868, *Proc. zool. Soc. Lond.* : 584 (Fraserpett R.)	—	1889.2.1.385–6	B 7693	51657	—	2690	—	—	—	—	—
73.	*neilgherriensis* (*Paradanio*)	1867, *Proc. zool. Soc. Lond.* : 296 (Neilgherry Hills)	2483, 2492, (A 825)	{1867.7.24.15–18, 1975.9.30.7	B 7724	53103	—	2715	2374	8322 (6 ex.)	2347 (6 ex.)	—	—
74.	*neilgherriensis* (*Rasbora*)	1867, *Proc. zool. Soc. Lond.* : 298 (Bowany R., Seegor R.)	2665, (A 817 – 2 ex.)	1867.7.24.9–10	—	—	11134	—	—	—	—	—	—
75.	*neilli* (*Barbus*)	1868, *Proc. zool. Soc. Lond.* : 581 (Madras Pres.)	2295, (7151†)	1868.10.27.16–17*	B 7870	—	—	2638	—	—	—	—	—
76.	*neilli* (*Labeo*)	1870, *Proc. zool. Soc. Lond.* : 99 (Sittang R., Billing R.)	A 668–9 (3 ex.), (1119–22 – 4 ex.)	1889.2.1.291–3 and 1471	—	51005	—	2603	—	8303	—	—	—
77.	*neilli* (*Rohtee*)	1873, *Proc. zool. Soc. Lond.* : 239 (Bowany R.)	2663	—	—	—	—	—	—	—	—	—	—
78.	*nigrescens* (*Labeo*)	1870, *Proc. zool. Soc. Lond.* : 371 (Mangalore)	1125†	—	—	53554–5	11031	2538	—	—	—	—	—
79.	*nigripinnis* (*Labeo*)	1877, *Fishes of India* : 544, pl. 132 (3) (Sind Hills)	1531, (1216–17)	1889.2.1.244–9	B 7842	53556–7	—	2634	—	8277 (3 ex.)	2299 (3 ex.)	—	—
80.	*nigrofasciatus* (*Barilius*)	1869, *Proc. zool. Soc. Lond.* : 620 (Pegu, Moulmein)	A 877, (A 878), (2476)	1889.2.1.1320–5	B 7558	—	—	2573	—	—	—	—	—
81.	*papillatus* (*Barilius* [*Barilius*])	1869, *Proc. zool. Soc. Lond.* : 378 (Cossye R. in Orissa)	(A 876)	—	—	54891	—	2677	—	—	—	—	—
82.	*parrah* (*Puntius*)	1865, *Proc. zool. Soc. Lond.* : 301 (Karriavanoor)	2718†	{1865.7.17.10, 1889.2.1.4343–5*, 1975.9.30.8–9*	B 7840	54478–9	—	2555	—	—	—	—	—
83.	*perlee* (*Puntius*)	1865, *Fishes of Malabar* : 211 (Malabar)	—	1865.7.17.12	—	—	—	—	—	—	—	—	—
84.	*pinnauratus* (*Cyclocheilichthys*)	1865, *Proc. zool. Soc. Lond.* : 300 (Cochin)	2728†	1889.2.1.4332–3	—	54468–70	—	2582	—	8216 (2 ex.)	2309 (2 ex.)	—	—
85.	*puckelli* (*Puntius* [*Capoeta*])	1868, *Proc. zool. Soc. Lond.* : 197 (Bangalore)	(7162†)	1889.2.1.638 and 4378*	—	—	—	—	—	—	—	—	—
86.	*pulchellus* (*Barbus* [*Barbodes*])	1870, *Proc. zool. Soc. Lond.* : 372 (Canara)	(3136*†)	1889.2.1.4328*	—	54488	—	—	—	—	2355 (2 ex.)	—	—
87.	*punctatus* (*Puntius*)	1865, *Proc. zool. Soc. Lond.* : 302 (Cochin)	—	—	B 7746	54489–90	—	2545	—	8331	—	4303	—
88.	*punctatus* (*Schizothorax*)	1876, *Proc. zool. Soc. Lond.* : 785 (Cashmere Lake)	511†	—	—	51630	—	—	—	—	—	—	—
89.	*punjabensis* (*Chela*)	1872, *J. Asiat. Soc. Bengal* **41** (2) : 25 (Ravi R. at Lahore)	—	1889.2.1.1393–1402	B 7732	54141	—	2718	—	—	—	—	—
90.	*punjaubensis* (*Barbus* [*Puntius*])	1871 *J. Asiat. Soc. Bengal* **40** (2): 334 (Ravi R, at Lahore)	2456	—	—	? 54492	—	—	—	—	2349 (3 ex.)	—	—
91.	*rugosus* (*Barilius*)	1867, *Proc. zool. Soc. Lond.* : 294 (Bowany R., Seegor R.)	(A 871 – 2 ex.)	{1867.7.24.6–8, 1889.2.1.4367–9*	—	54895–6	—	—	—	—	—	—	—
92.	*sindensis* (*Cirrhina*)	1872, *J. Asiat. Soc. Bengal* **41** (2) : 319 (Sind Hills)	1530†	1889.2.1.253	B 7661	—	—	2626	—	—	—	—	—
93.	*sladoni* (*Chela*)	1869, *Proc. zool. Soc. Lond.* : 622 (Irrawaddi R.)	2628†, 2541, A 916 (2 ex.)	1889.2.1.259–62	B 7852	52151	—	2669	—	—	—	—	—
94.	*spinosus* (*Danio*)	1869, *Proc. zool. Soc. Lond.* : 621 (Pegu)	2494–5, (A 851)	1889.2.1.1250–1	B 7503	53109	—	2687	—	—	—	—	—
95.	*stevensonii* (*Barbus* [*Barbodes*])	1870, *Proc. zool. Soc. Lond.* : 100 (Akyab in Burma)	(2597)	—	—	—	—	—	—	—	—	—	—
96.	*stoliczkae* (*Danio*)	1869, *Proc. zool. Soc. Lond.* : 621 (Moulmein)	(A 852)	1889.2.1.1363–72	—	—	—	—	—	—	—	—	—
	stoliczkanus (*Barbus* [*Puntius*]) (nom. nov. for *mcclellandi*)	1871, *J. Asiat. Soc. Bengal* **40** (2) : 328 (Moulmein)	—	—	—	—	—	—	—	8318	—	—	—
97.	*stracheyi* (*Barbus* [*Barbodes*])	1871, *J. Asiat. Soc. Bengal* **40** (2) : 307 (Moulmein, Akyab)	2175	—	—	—	—	—	—	—	—	—	—
98.	*thomassi* (*Barbus*)	1873, *Proc. zool. Soc. Lond.* : 707 (S. Canara)	(2413, 2326, 2327†)	1889.2.1.562–3	I 139	54767	11056	2640	(? lost)	8218	2317	4279	—
99.	*thomassi* (*Scaphiodon*)	1877, *Fishes of India* : 551, pl. 134 (1) (S. Canara)	2192	—	B 7825	? 54773	—	—	—	—	—	—	—
100.	*untrahi* (*Chela*)	1869, *Proc. zool. Soc. Lond.* : 381 (Mahanuddi)	2174†, 2543, A 927 (2 ex.)	{1889.2.1.1746–51, 1975.9.30.10*	B 7901, B 7783–4	—	—	—	—	—	—	—	—
101.	*vittatus* (*Puntius*)	1865, *Proc. zool. Soc. Lond.* : 303 (Cochin)	—	{1865.7.17.22, 1889.2.1.4377*	B 7554	54783–4	—	2679	—	8105 (2 ex.)	—	4314	—
102.	*waageni* (*Barbus* [*Puntius*])	1872, *J. Asiat. Soc. Bengal* **41** (2) : 325 (Salt Range in W. Punjab)	2300, 2408	1889.2.1.825–30	B 7632	54788, 54792, 54794	—	2723	—	—	—	—	—
103.	*watsoni* (*Scaphiodon*)	1872, *J. Asiat. Soc. Bengal* **41** (2) : 324 (Sind Hills)	2596	1889.2.1.370–9	B 7751	51671	11042	2552	—	8278 (4 ex.)	2303 (4 ex.)	—	—
104.	*woolaree* (*Rasbora*)	1867, *Proc. zool. Soc. Lond.* : 298 (Bowany R.)	—	{1867.7.24.31–3, 1889.2.1.4361*	—	—	—	—	—	—	—	—	—
105.	*wynaadensis* (*Barbus* [*Barbodes*])	1873, *J. Linn. Soc. Lond.* **11** : 528 (Vithry in the Wynaad)	2382†, 2729†, 2320	—	B 7989	54787, 54789	11057	2587	—	8266 (2 ex.)	2318 (2 ex.)	4291	—
COBITIDAE													
106.	*agrensis* (*Platacanthus*)	1865, *Proc. zool. Soc. Lond.* : 296 (Trichoor nr Cochin)	—	{1865.7.17.25, 1975.9.30.12*	—	—	—	—	—	—	—	—	—
107.	*aureus* (*Nemacheilus*)	1872, *J. Asiat. Soc. Bengal* **41** (2) : 184 (Jabulpur)	(2574†)	1889.2.1.1587–90	—	—	—	—	—	—	—	—	—
108.	*blythii* (*Nemacheilus*)	1869, *Proc. zool. Soc. Lond.* : 552 (? Burma)	(A 960)	—	—	—	—	—	—	—	—	—	—
109.	*chryseus* (*Nemacheilus*)	1873, *J. Linn. Soc. Lond.* **11** : 529 (Bowany R.)	—	—	—	—	—	—	—	—	—	—	—
110.	*denisoni* (*Nemacheilus*)	1867, *Proc. zool. Soc. Lond.* : 287 (Bowany R.)	(2682†, A 962)	1867.7.24.29	B 7507	48406	10800	2661	—	8283 (5 ex.)	—	—	—

		Calcutta	London	Sydney	Vienna	Berlin	Leiden	Florence	Leningrad	Chicago	Harvard	Paris
111. *evezardi* (*Nemacheilus*)	1872, *J. Asiat. Soc. Bengal* **41** (2) : 182 (Poona)	(2678†)	—	—	—	—	—	—	—	—	—	—
112. *gracilis* (*Nemacheilus*)	1876, *Proc. zool. Soc. Lond.* : 798 (Basgo on upper Indus)	1469†	1889.2.1.1726	—	48413	—	—	—	—	—	—	—
113. *guenther* (*Nemacheilus*)	1867, *Proc. zool. Soc. Lond.* : 285 (Neilgherry Hills)	2578, (A 959)	1867.7.24.28	B 7488	48412	—	2666	—	—	—	—	—
114. *maculatus* (*Platacanthus*)	1867, *Proc. zool. Soc. Lond.* : 941 (Madras)	—	1868.10.27.36	—	—	—	—	—	—	—	—	—
115. *mugah* (*Nemacheilus*)	1869, *Proc. zool. Soc. Lond.* : 382 (Cossye R. at Midnapore)	(A 961)	—	—	—	—	—	—	—	—	—	—
116. *multifasciatus* (*Nemacheilus*)	1878, *Fishes of India* : 617, pl. 153 (7) (Darjeeling, Assam)	2677†	1889.2.1.1665–7	—	48428	—	—	—	—	—	—	—
117. *pulchellus* (*Nemacheilus*)	1873, *J. Linn. Soc. Lond.* **11** : 528 (Bowany R.)	2581†, 2563	1889.2.1.1591–1600	B 7739	48427	—	2664	—	8263 (2 ex.)	—	—	—
118. *semiarmatus* (*Nemacheilus*)	1867, *Proc. zool. Soc. Lond.* : 286 (Bowany R., Seegor R.)	—	1867.7.24.25–7	B 7740	—	—	—	—	—	—	—	—
119. *serpentinus* (*Nemacheilus*)	1869, *Proc. zool. Soc. Lond.*: 551 (N. India)	(A 955 – 2 ex.)	—	—	—	—	—	—	—	—	—	—
120. *sinuatus* (*Nemacheilus*)	1870, *Proc. zool. Soc. Lond.* : 371 (Wynaad)	—	—	—	—	—	—	—	—	—	—	—
121. *stoliczkae* (*Nemacheilus*)	1867, *Proc. zool. Soc. Lond.* : 347 (Wynaad, nr Calicut)	(2683†)	1889.2.1.1661–4	B 7487	—	—	2675	—	—	—	—	—
122. *tenuis* (*Nemacheilus*)	1876, *Proc. zool. Soc. Lond.* : 796 (Aktash, Yankihissar)	684–6, 710–11, (709 – destroyed)	1889.2.1.1716–7	—	48447	—	—	—	—	—	—	—
123. *triangularis* (*Nemacheilus*)	1865, *Proc. zool. Soc. Lond.* : 295 (Mundikyum)	(2681†)	1865.7.17.23	B 7738	48449	—	—	—	—	—	—	—
124. *yarkandensis* (*Nemacheilus*)	1876, *Proc. zool. Soc. Lond.* : 796 (Yarkand, Pas Robat, Yankihissar, Kashgar)	1228–9, 1471–2	1889.2.1.1718–35	—	48453	—	—	—	—	—	—	—
SILURIDAE												
125. *dubat* (*Silurus*)	1873, *Proc. zool. Soc. Lond.* : 239 (Darjeeling)	(1118†, 1232)	—	—	—	—	—	—	—	—	—	—
126. *eschomi* (*Callichrous*)	1871, *Proc. zool. Soc. Lond.* : 710 (sub-Himalayan range of Punjab)	—	—	—	—	—	—	—	—	—	—	—
127. *nigrescens* (*Callichrous*)	1869, *Proc. zool. Soc. Lond.* : 616 (Irrawaddi, Pegu, Sittang)	(A 500 – 2 ex.)	—	—	—	—	—	—	—	—	—	—
128. *notatus* (*Callichrous*)	1869, *Proc. zool. Soc. Lond.* : 616 (Burma rivers)	1275, (A 499 – 2 ex.)	—	—	—	—	—	—	—	—	—	—
[illegible] *punctata* (*Aditichthys*)	1871, *Proc. zool. Soc. Lond.* : 713 (Jumna R. at Delhi, Lower Punjab)	(420)	1889.2.1.2585–93	B 7570	47849, 63	11213	2763	—	—	—	—	—
[illegible] *punctatus* (*Silurus*) (see also *wynaadensis* nom. nov.)	1868, *Proc. zool. Soc. Lond.* : 155 (Wynaad)	461†, 1233, A 480	1868.5.14.6–7	B 7990	—	11221	—	—	—	—	—	—
[illegible] *[illegible]ndensis* (*Callichrous*)	1877, *Fishes of India* : 476, pl. 110 (1) (Sind)	505†	—	—	—	—	—	—	—	—	—	—
[illegible] *[illegible]wynaadensis* (*Silurus*) nom. nov. for *punctatus*	1873, *Proc. zool. Soc. Lond.* : 237 (Wynaad)	—	—	—	—	—	—	—	—	—	—	—
BAGRIDAE (see also No. 151)												
131. *aomatus* (*Macrones*)	1865, *Proc. zool. Soc. Lond.* : 289 (Cochin)	(1084†)	1865.7.17.21, 1975.9.30.13*	—	45165	—	—	—	—	—	—	—
132. *bleekeri* (*Macrones*)	1877, *Fishes of India* : 451, pl. 101 (1) (Jumna R., Prome in Burma)	1076†, 781	1889.2.1.2335–6	B 7999	44168	—	3024	—	—	—	—	—
133. *blythii* (*Macrones*) (*SISORIDAE*)	1877, *Fishes of India* : 445 (Tenasserim Provinces)	A 549	—	—	—	—	—	—	—	—	—	—
134. *chrysea* (*Rita*)	1877, *Fishes of India* : 455, pl. 104 (1) (Orissa)	498†	—	—	—	—	3026	—	—	—	—	—
135. *chrysens* (*Pseudobagrus*)	1865, *Proc. zool. Soc. Lond.* : 290 (Cochin)	(475†)	1865.7.17.5–6	—	44177	9575	6870	—	—	—	4280	—
136. *fluviatilis* (*Leiocassis*)	1888, *Fishes of India, Suppl.* : 805 (Tenasserim Provinces)	—	—	—	—	—	—	—	—	—	—	—
139. *microphthalmus* (*Macrones*)	1877, *Fishes of India* : 446, pl. 100 (4) (nr Irrawaddi)	2592†	—	B 7918	—	—	—	—	—	—	—	—
140. *sykesii* (*Gagrius*)	1867, *Proc. zool. Soc. Lond.* : 563 (Kurnool, Deccan)	1200†, (3107)	—	—	—	—	—	—	—	—	—	—
SCHILBEIDAE												
141. *acutirostris* (*Pseudeutropius*)	1869, *Proc. zool. Soc. Lond.* : 618 (Burma)	484†, (A 505)	—	B 7967	48327	—	—	—	—	—	—	—
burmanicus (*Eutropiichthys*) var.	1877, *Fishes of India* : 490 (Burma – variety of *E. vacha*)	B 38–9, (B 219), B 306	—	—	—	—	—	—	—	—	—	—
142. *sykesii* (*Silundia*)	1876, *J. Linn. Soc. Lond.* **12** : 569 (Kistna R.)	1230	—	B 8084	44624	—	—	—	—	—	—	—
AKYSIDAE												
143. *kuzii* (*Akysis*)	1871, *Proc. zool. Soc. Lond.* : 703 (Pegue Yomas in Burma)	—	—	—	—	—	—	—	—	—	—	—
SISORIDAE (see also No. 135)												
144. *andersoni* (*Exostoma*)	1869, *Proc. zool. Soc. Lond.* : 524 (Hotham, Ponsee in China)	A 595 – 2 ex. (A 596 – 2 ex.)	—	—	—	—	—	—	—	—	—	—
145. *blythii* (*Exostoma*)	1869, *Proc. zool. Soc. Lond.* : 525 (rivers below Darjeeling)	2361†, A 599 (2 ex.)	—	—	46486	—	—	—	—	—	—	—
146. *buchanani* (*Nangra*)	1877, *Fishes of India* : 494, pl. 113 (3) (Ganges, Jumna, Indus)	—	—	B 7541	45328	10841	2770	—	—	—	—	—
147. *elongata* (*Hara*)	1871, *Proc. zool. Soc. Lond.* : 704 (Garrow Hills)	436	—	—	—	—	—	—	—	—	—	—
148. *jerdoni* (*Hara*)	1870, *J. Asiat. Soc. Bengal* **39** (2) : 39, pl. 4 (2a–c) (Sylhet Dist.)	431	—	—	—	—	—	—	—	—	—	—

		Calcutta	London	Sydney	Vienna	Berlin	Leiden	Florence	Leningrad	Chicago	Harvard	Paris
149. *lineatum* (*Euglyptosternum*)	1877, *Fishes of India* : 500, pl. 116 (7) (Jumna R., Suddya)	1312†	—	B 7509	—	—	—	—	—	—	—	—
150. *madraspatanum* (*Glyptosternum*)	1873, *J. Linn. Soc. Lond.* **11** : 526 (Bowany R.)	1313†, 1235	1889.2.1.2680–7	B 7759, B 8004	46582–3	10798, 10839, 11208	2739	—	—	—	—	—
151. *malabarica* (*Hara*) (= *BAGRIDAE*)	1865, *Fishes of Malabar* : 184, pl. 13 (3) (mountain streams of Travancore)	—	—	B 7624	45228	—	—	—	—	—	—	—
152. *modestum* (*Glyptosternum*)	1871, *Proc. zool. Soc. Lond.* : 714 (upper part of Jumna)	—	—	B 7562	—	—	2765	—	—	—	—	—
153. *punctata* (*Nangra*)	1877, *Fishes of India* : 494, pl. 155 (8) (Bheer Bhoom on Sone R.)	—	—	B 7566	—	—	—	—	—	—	—	—
154. *stoliczkae* (*Exostoma*)	1876, *Proc. zool. Soc. Lond.* : 782 (Indus headwaters)	497†, (1196–8)	—	I 122	—	—	—	—	—	—	—	—
155. *sykesi* (*Glyptosternum*)	1873, *Proc. zool. Soc. Lond.* : 748 (on *G. lonah* Günther, *non* Sykes)	—	1860.3.16.756	—	—	—	—	—	—	—	—	—
CLARIIDAE												
156. *assamensis* (*Clarias*)	1877, *Fishes of India* : 485 (Assam)	(1268)	—	B 7485	—	—	—	—	—	—	—	—
OLYRIDAE												
157. *burmanica* (*Olyra*)	1871, *Proc. zool. Soc. Lond.* : 711 (Pegue Yomas)	—	—	B 7560	—	—	—	—	—	—	—	—
ARIIDAE												
158. *acutirostris* (*Arius*)	1877, *Fishes of India* : 459, pl. 107 (1) (Moulmein on Salween R.)	454†, 500, A 569 (13 ex.)	1870.6.14.34	B 7733	44358	—	2735	—	—	—	—	—
159. *andamanensis* (*Arius*)	1870, *Proc. zool. Soc. Lond.* : 699 (Andamans)	1307†	—	—	—	—	—	—	—	—	—	—
160. *buchanani* (*Arius*)	1877, *Fishes of India* : 463, pl. 105 (6) (Irrawaddy R., Calcutta)	(1302†), 456	—	—	—	—	—	—	—	—	—	—
161. *burmanicus* (*Arius*)	1869, *Proc. zool. Soc. Lond.* : 618 (Moulmein)	456†, A 568 (8 ex.), (B 292)	1870.6.14.43–44	B 7520	—	—	2754	—	—	—	—	—
162. *jella* (*Arius*)	1877, *Fishes of India* : 467, pl. 106 (3) (Madras)	1304†	—	—	—	—	—	—	—	—	—	—
163. *malabaricus* (*Arius*)	1877, *Fishes of India* : 464, pl. 107 (4) (Canara)	1305†	—	—	—	—	—	—	—	—	—	—
164. *parvipinnis* (*Arius*)	1877, *Fishes of India* : 460 (Coromandel coast)	—	—	—	—	—	—	—	—	—	—	—
165. *platystomus* (*Arius*)	1877, *Fishes of India* : 464, pl. 107 (3) (Canara)	1306†	—	—	—	—	—	—	—	—	—	—
166. *serratus* (*Arius*)	1877, *Fishes of India* : 462, pl. 105 (3) (Sind)	467†	—	B 7971	—	—	—	—	—	—	—	—
167. *sthenocephalus* (*Osteogeneiosus*)	1877, *Fishes of India* : 469, pl. 108 (3) (Moulmein)	1263†	—	—	—	—	—	—	—	—	—	—
168. *tenuispinis* (*Arius*)	1877, *Fishes of India* : 466, pl. 107 (5) (Bombay)	482†	—	—	—	—	—	—	—	—	—	—
BREGMACEROTIDAE												
169. *atripinnis* (*Bregmaceros*)	1869, *Proc. zool. Soc. Lond.* : 522 (Burma)	—	—	—	43192, 6	9563, 10797	2001, 4333	—	—	—	—	—
OPHIDIIDAE												
170. *jerdoni* (*Brotula*)	1888, *Fishes of India, Suppl.* : 804 (Madras)	—	—	—	—	—	—	—	—	—	—	—
171. *maculata* (*Brotula*)	1868, *Proc. zool. Soc. Lond.* : 196 (Madras)	(3115*)	1868.4.15.1–2	—	—	—	—	—	—	—	—	—
EXOCOETIDAE												
172. *cirrhatus* (*Hemiramphus*)	1873, *Proc. zool. Soc. Lond.* : 709 (Bombay)	1297†	—	—	—	—	—	—	—	—	—	—
173. *neglectus* (*Hemirhamphus*)	1869, *Proc. zool. Soc. Lond.* : 526 (Calcutta, Burma)	A 620–1 (23 ex.), A 623 (9 ex.)	—	—	—	—	—	—	—	—	—	—
CYPRINODONTIDAE												
174. *argenteus* (*Panchax*)	1867, *Proc. zool. Soc. Lond.* : 706 (Madras)	(A 637), ? 1479†	1868.4.15.10	—	—	—	—	—	—	—	—	—
175. *stoliczkanus* (*Cyprinodon*)	1872, *J. Asiat. Soc. Bengal* **41** (2) : 258 (Cutch)	(1477†, 1478†)	1889.2.1.2065–74	—	—	—	—	—	—	—	—	—
ATHERINIDAE												
176. *melanostigma* (*Atherina*)	1876, *Fishes of India* : 345 (Madras)	2031	—	—	—	—	—	—	—	—	—	—
HOLOCENTRIDAE												
177. *andamanense* (*Holocentrum*)	1870, *Proc. zool. Soc. Lond.* : 686 (Port Blair)	1003	—	—	—	—	—	—	—	—	—	—
178. *ornatus* (*Rhynchichthys*)	1868, *Proc. zool. Soc. Lond.* : 149 (Madras)	(2825)	1868.10.27.37	—	—	—	—	—	—	—	—	—
SYNGNATHIDAE												
179. *bleekeri* (*Microphis*)	1865, *Fishes of Malabar* : 265 (river at Cochin)	2623, (7163†)	—	—	—	—	—	—	—	—	—	—
CHANNIDAE												
180. *aurolineatus* (*Ophiocephalus*)	1870, *Proc. zool. Soc. Lond.* : 99 (Moulmein)	—	—	—	—	—	—	—	—	—	—	—
181. *diplogramma* (*Ophiocephalus*)	1865, *Proc. zool. Soc. Lond.* : 36 (Cochin)	1389†	1865.7.17.24	—	—	—	—	—	—	—	4276	—

		Calcutta	London	Sydney	Vienna	Berlin	Leiden	Florence	Leningrad	Chicago	Harvard	Paris
SCORPAENIDAE												
182. *bleekeri* (*Scorpaena*)	1875, *Fishes of India* : 149, 747, pl. 36 (2) (Andamans)	(1751†)	—	—	—	—	—	—	—	—	—	—
183. *inermis* (*Centropogon*)	1875, *Fishes of India* : 155, pl. 38 (2) (Madras)	1734†	—	—	—	—	—	—	—	—	—	—
184. *rosea* (*Scorpaena*)	1807, *Proc. zool. Soc. Lond.* : 703 (Madras)	—	1868.5.14.3	—	—	—	—	—	—	—	—	—
185. *[illegible]* (*Centropogon*)	1875, *Fishes of India* : 160, pl. 38 (8) (Coromandel coast)	1737, (2780*, 2910†)	{1889.2.1.3198 and 4292*	—	—	{9570, 9889	993	2376	—	—	—	—
186. *[illegible]* (*Sebastes*)	1875, *Fishes of India* : 148, pl. 36 (1) (Nicobars)	(1748†)	—	—	—	—	—	—	—	—	—	—
TRIGLIDAE												
187. *[illegible]* (*Peristethus*)	1888, *Fishes of India, Suppl.* : 791 (Galle in Ceylon)	(? in Colombo Museum)	—	—	—	—	—	—	—	—	—	—
[illegible]												
[illegible] (*Amphiprionichthys*)	1869, *Proc. zool. Soc. Lond.* : 515 (Galle in Ceylon)	(A 114 – 3 ex.)	—	—	—	—	—	—	—	—	—	—
SYNANCEIIDAE												
189. *melanostigma* (*Pseudosynanceia*)	1875, *Fishes of India* : 163, pl. 55 (6) (Kurrachee)	1761†	—	B 8183	—	—	—	—	—	—	—	—
PINROPOMIDAE												
190. *thomassi* (*Imbassis*)	1870, *Proc. zool. Soc. Lond.* : 369 (Calicut, Mangalore)	{818–23, 1886, (A 42, A 30)	{1875.5.2.2–3, 1970.9.30.17*	—	—	8985	—	—	—	—	—	9858
SERRANIDAE												
191. *[illegible]* (*Serranus*)	1878, *Fishes of India* : 746 (Madras ; replaces homonym *dayi*)	1997, (2920)	{1889.2.1.2791 and 4226*	B 8272	39248	—	—	—	—	—	—	—
192. *[illegible]* (*Serrina*)	1870, *Proc. zool. Soc. Lond.* : 678 (Andamans)	? 1678†	1870.5.18.76	—	—	—	—	—	—	—	—	—
193. *[illegible]* (*Serranus*)	1867, *Proc. zool. Soc. Lond.* : 700 (Madras)	2952*†	—	—	—	—	—	—	—	—	—	—
194. *[illegible]* *serranus*	1870, *Proc. zool. Soc. Lond.* : 678 (Port Blair)	1680†	—	—	—	—	—	—	—	—	—	—
195. *[illegible]* (*Priacanthichthys*)	1868, *Proc. zool. Soc. Lond.* : 193 (Madras)	—	1868.10.27.38	—	—	—	—	—	—	—	—	—
196. *[illegible]* (*Epinephelus*)	1875, *Fishes of India* : 77, pl. 20 (3) (Sind)	336*†	—	—	—	—	—	—	—	—	—	—
197. *[illegible]* *serranus*)	1867, *Proc. zool. Soc. Lond.* : 699 (Madras)	1676†	—	—	—	—	—	—	—	—	—	—
198. *[illegible]* *serranus*)	1875, *Fishes of India* : 11, pl. 1 (3) (Aden, Sind)	{897–9, 1955, 1679†	—	B 8157	—	8885	73	—	—	—	—	9360
[illegible]												
199. *[illegible]* (*Apogon*)	1875, *Fishes of India* : 63, pl. 17 (1) (Madras)	1904†, 1905	—	B 8226	—	—	4331	—	—	—	—	—
200. *[illegible]* *fasciatus*	1875, *Fishes of India* : 58, pl. 16 (3) (Madras)	1872†, 1870–1	—	—	—	—	—	—	—	—	—	—
201. *[illegible]* (*Apogon*)	1867, *Proc. zool. Soc. Lond.* : 936 (Madras)	(1899†)	{1867.11.6.2–4, 1975.9.30.16*	—	—	—	—	—	—	—	—	—
202. *[illegible]* (*Apogon*)	1888, *Fishes of India, Suppl.* : 784 (Madras)	—	1889.8.17.2	—	—	—	—	—	—	—	—	—
203. *[illegible]* *fraenum*	1888, *Fishes of India, Suppl.* : 785 (Akyab in Burma)	—	—	—	—	—	—	—	—	—	—	—
[illegible]												
204. *[illegible]* (*Carana*)	1873, *Proc. zool. Soc. Lond.* : 237 (Madras)	239†	—	—	—	—	—	—	—	—	—	? (A 6504)
205. *[illegible]* *carana*	1870, *Proc. zool. Soc. Lond.* : 689 (Andamans)	252†	—	—	—	—	—	—	—	—	—	—
206. *[illegible]* (*Scolichthys*)	1867, *Proc. zool. Soc. Lond.* : 559 (Madras)	2885†	1867.5.30.1	—	—	—	—	—	—	—	—	—
207. *[illegible]* (*Caranx*)	1865, *Proc. zool. Soc. Lond.* : 23 (Cochin)	(3053 – destroyed)	1865.7.17.1*	—	—	—	—	—	—	—	—	—
208. *[illegible]* (*Caranx*)	1867, *Proc. zool. Soc. Lond.* : 704 (Madras)	30†	1868.10.27.6	—	—	—	—	—	—	—	—	—
209. *[illegible]* (*Caranx*)	1876, *Fishes of India* : 225, pl. 51 (5) (Andamans, Madras)	{267†, 241, (2845 – destroyed)	—	B 8043	—	—	—	—	—	—	—	—
LUTJANIDAE												
210. *[illegible]* (*Pristipomatoides*)	1867, *Proc. zool. Soc. Lond.* : 937 (Madras)	(2927*†)	—	—	—	—	—	—	—	—	—	—
211. *[illegible]* (*Genyoroge*)	1870, *Proc. zool. Soc. Lond.* : 679 (Andamans)	(? 1699)	—	—	—	—	—	—	—	—	—	—
212. *[illegible]* *Lutianus*)	1875, *Fishes of India* : 40 (seas of India)	(2942 – destroyed)	—	—	—	—	—	—	—	—	—	—
213. *[illegible]* (*Mesoprion*)	1870, *Proc. zool. Soc. Lond.* : 680 (Andamans)	1672, (2010, 3143)	—	—	—	—	—	—	—	—	—	—
214. *[illegible]* *Lutianus*)	1875, *Fishes of India* : 38, pl. 11 (6) (Madras)	(3021†–destroyed)	—	—	—	—	—	—	—	—	—	—
215. *[illegible]* *Lutianus*)	1875, *Fishes of India* : 39, pl. 12 (2) (seas of India)	(3000*†)	—	—	—	—	—	—	—	—	—	—
216. *[illegible]* (*Mesoprion*)	1809, *Proc. zool. Soc. Lond.* : 514 (Andamans, Ceylon)	1713†	1870.5.18.48	—	—	—	—	—	—	—	—	—
LEMIPTERIDAE												
217. *bleekeri* (*Synagris*)	1875, *Fishes of India* : 92, pl. 24 (1) (Madras)	290†	{1889.2.1.2963–7 and 4245*	—	—	—	—	—	—	—	—	—
218. *gramineus* (*Synagris*)	1865, *Proc. zool. Soc. Lond.* : 14 (Cochin)	(2932† – destroyed)	—	—	—	8542	—	—	—	—	—	—
219. *notatus* (*Dentex* (*Synagris*))	1870, *Proc. zool. Soc. Lond.* : 684 (Andamans)	(229†)	—	B 8219	—	—	—	—	—	—	—	—

		Calcutta	London	Sydney	Vienna	Berlin	Leiden	Florence	Leningrad	Chicago	Harvard	Paris
POMADASYIDAE												
220. *alta* (*Diagramma*)	1869, *Proc. zool. Soc. Lond.* : 514 (locality ?)	A 57 (2 ex.)	—	—	—	—	—	—	—	—	—	—
221. *neilli* (*Pristipoma*)	1867, *Proc. zool. Soc. Lond.* : 936 (Madras)	(3026†)	1867.11.6.28	—	—	—	—	—	—	—	—	—
222. *olivaceum* (*Pristipoma*)	1875, *Fishes of India* : 73, pl. 19 (1) (Sind)	1992†	1889.2.1.2935–9	B 8335	37382	—	—	—	—	—	—	9330
SPARIDAE												
223. *cuvieri* (*Chrysophrys*)	1875, *Fishes of India* : 141, pl. 34 (3) (seas of India)	1782†, 1791–2	1975.9.30.21*	B 8225	—	—	1060	—	—	—	—	—
SCIAENIDAE												
224. *bleekeri* (*Sciaena*)	1876, *Fishes of India* : 185, pl. 45 (4) (Bombay)	988†, 968	—	—	—	—	—	—	—	—	—	—
225. *brunneus* (*Otolithus*)	1873, *J. Linn. Soc. Lond.* **11** : 524 (Bombay)	906†, 1024–6	1889.2.1.3146–7	B 8193–4	—	—	670	—	—	—	—	10004
226. *glaucus* (*Sciaena*)	1876, *Fishes of India* : 192, pl. 46 (2) (Malabar)	984–5, (3025)	—	B 8236–7	—	9160	697	—	—	—	—	—
227. *neilli* (*Corvina*)	1865, *Fishes of Malabar* : 55 (Malabar)	—	—	—	—	—	—	—	—	—	—	—
228. *osseus* (*Sciaena*)	1876, *Fishes of India* : 193, pl. 46 (3) (Malabar)	1340†	—	—	—	—	—	—	—	—	—	—
229. *sinuata* (*Umbrina*)	1876, *Fishes of India* : 182, pl. 46 (1) (Kurrachee)	939 (fragile)	—	—	—	—	—	—	—	—	—	—
MULLIDAE												
230. *caeruleus* (*Upeneoides*)	1868, *Proc. zool. Soc. Lond.* : 194 (Madras)	(405)	1975.9.30.20*	—	—	—	—	—	—	—	—	—
231. *fasciolatus* (*Upeneoides*)	1868, *Proc. zool. Soc. Lond.* : 151 (Madras)	—	—	—	—	—	—	—	—	—	—	(no number)
232. *guttatus* (*Upeneoides*)	1867, *Proc. zool. Soc. Lond.* : 938 (Madras)	(2912*)	1868.5.14.11, 1975.9.30.19*	—	—	—	—	—	—	—	—	—
PEMPHERIDAE												
233. *russellii* (*Pempheris*)	1888, *Fishes of India, Suppl.* : 788 (Sind)	910†	—	—	—	—	—	—	—	—	—	—
KYPHOSIDAE												
234. *indicus* (*Crenidens*)	1873, *Rept. sea fish & fisheries India* : 186 (Sind)	1774†, (1775–6)	? 1868.10.27.28, 1975.9.30.18*	B 8216	—	8912	1038	—	—	—	—	—
CICHLIDAE												
235. *canarensis* (*Etroplus*)	1877, *Fishes of India* : 414, pl. 89 (5) (S. Canara)	1658†	1889.2.1.3974–6	—	—	—	1103	—	—	—	4316	—
POMACENTRIDAE												
236. *cochinensis* (*Glyphidodon*)	1865, *Proc. zool. Soc. Lond.* : 38 (Cochin)	—	1870.6.14.6, 1889.2.1.4293–5*	—	—	—	—	—	—	—	—	—
237. *jerdoni* (*Pomacentrus*)	1873, *Proc. zool. Soc. Lond.* : 237 (Madras)	1612†	—	—	—	—	—	—	—	—	—	—
238. *labiatus* (*Pomacentrus*)	1877, *Fishes of India* : 384, pl. 81 (2) (Andamans, Nicobars)	1609†, 1603–4	1889.2.1.3935–8	I 149	—	—	896	—	—	—	—	—
239. *leucopleura* (*Glyphidodon*)	1877, *Fishes of India* : 385, pl. 83 (4) (Andamans)	1434†	—	—	60982	—	—	—	—	—	—	—
240. *notatus* (*Glyphidodon*)	1869, *Proc. zool. Soc. Lond.* : 521 (Andamans)	1433†, A 424 (6 ex.)	—	—	—	—	—	—	—	—	—	—
241. *sindensis* (*Glyphidodon*)	1873, *Rept. sea fish & fisheries India* : 258 (Kurrachee)	1619†, 1620–1	1889.2.1.3944–8	I 144	—	—	—	4000	—	—	—	—
CIRRHITIDAE												
242. *bleekeri* (*Cirrhitichthys*)	1873, *Proc. zool. Soc. Lond.* : 705 (Madras)	(1745†), (2924*, 2977– destroyed)	? 1889.2.1.3033–4	—	—	—	—	—	—	—	—	—
CEPOLIDAE												
243. *indica* (*Cepola*)	1888, *Fishes of India, Suppl.* : 796 (Madras)	—	—	—	—	—	—	—	—	—	—	—
MUGILIDAE												
244. *cunnumboo* (*Mugil*)	1865, *Fishes of Malabar* : 141 (Malabar)	1418	—	—	—	—	—	—	—	—	—	—
245. *hamiltonii* (*Mugil*)	1869, *Proc. zool. Soc. Lond.* : 614 (Sittang R. in Burma)	1401†, B 150, A 355	1889.2.1.3724–5	B 7993	67653	—	—	—	—	—	—	—
246. *jerdoni* (*Mugil*)	1876, *Fishes of India* : 352 (seas of India)	(1404–5 4 ex.), (2909* – destroyed)	1889.2.1.3702–5	B 7983	67694	—	—	—	8238	2449	—	—
247. *klunzingeri* (*Mugil*)	1888, *Proc. zool. Soc. Lond.* : 264 (Bombay)	1407†	—	—	—	—	—	—	—	—	—	—
248. *olivaceus* (*Mugil*)	1876, *Fishes of India* : 357 (seas of India)	2142	1889.2.1.3753–6, 1975.9.30.15*	—	—	—	—	4701	—	—	—	—
249. *poicilus* (*Mugil*)	1865, *Proc. zool. Soc. Lond.* : 33 (Cochin)	2135	1865.1.19.8	—	67381	10775	1638	—	8271	2448	—	—
SPHYRAENIDAE												
250. *acutipinnis* (*Sphyraena*)	1876, *Fishes of India* : 342, pl. 79 (1) (Sind)	1599†	—	—	—	—	—	—	—	—	—	—

		Calcutta	London	Sydney	Vienna	Berlin	Leiden	Florence	Leningrad	Chicago	Harvard	Paris
LABRIDAE												
251. *bicolor* (*Labrichthys*)	1870, *Proc. zool. Soc. Lond.* : 696 (Andamans)	1654	—	—	—	—	—	—	—	—	—	—
252. *halei* (*Coris*)	1888, *Fishes of India, Suppl.* : 803 (Ceylon)	(? Colombo Museum)	—	—	—	—	—	—	—	—	—	—
253. *metage* (*Platyglossus*)	1888, *Fishes of India, Suppl.* : 802 (Saddle I. off Kyoukphyoo)	—	—	—	—	—	—	—	—	—	—	—
254. *neilli* (*Cossyphus*)	1867, *Proc. zool. Soc. Lond.* : 560 (Madras)	(3058*† – destroyed)	1868.5.14.1, 1889.2.1.4296*	—	—	—	—	—	—	—	—	—
255. *roseus* (*Platyglossus*)	1888, *Proc. zool. Soc. Lond.* : 264 (Kurrachee)	—	1889.2.1.3968	—	—	—	—	—	—	—	—	—
256. *rufa* (*Novaculа*)	1873, *Proc. zool. Soc. Lond.* : 238 (Madras)	1592†	—	—	—	—	—	—	—	—	—	—
257. *striatus* (*Epibulus*)	1870, *Proc. zool. Soc. Lond.* : 697 (Andamans)	1562†	—	—	—	—	—	—	—	—	—	—
MUGILOIDIDAE												
258. *cylindrica* (*Percis*)	1888, *Proc. zool. Soc. Lond.* : 260 (Andamans)	—	1889.2.1.3330–1	—	—	—	—	—	—	—	—	—
BLENNIIDAE												
259. *andamensis* (*Salarias*)	1869, *Proc. zool. Soc. Lond.* : 611 (Andamans)	(A 285, A 287)	1889.2.1.3606	—	—	—	—	—	—	—	—	—
260. *andersonii* (*Salarias*)	1876, *Fishes of India* : 331 (Galle in Ceylon)	A 274 (2 ex.)	—	—	—	—	—	—	—	—	—	—
261. *boehlkei* (*Salarias*)	1888, *Fishes of India, Suppl.* : 798 (Saddle I. off Kyoukphyoo)	—	—	—	—	—	—	—	—	—	—	—
262. *bipunctatus* (*Petroscirtes*)	1876, *Fishes of India* : 327, pl. 71 (3) (Calicut)	2082†	—	—	—	—	—	—	—	—	—	—
263. *cruentiparus* (*Salarias*)	1888, *Fishes of India, Suppl.* : 797 (Saddle I. off Kyoukphyoo)	—	—	—	—	—	—	—	—	—	—	—
264. *leopardus* (*Salarias*)	1869, *Proc. zool. Soc. Lond.* : 518 (Galle in Ceylon)	(A 296†)	—	—	—	—	—	—	—	—	—	—
265. *lineatus* (*Petroscirtes*)	1876, *Fishes of India* : 327, pl. 69 (8) (Kurrachee)	(2026†, 2029)	—	—	—	—	—	—	—	—	—	—
266. *neilli* (*Salarias*)	1888, *Proc. zool. Soc. Lond.* : 263 (Kurrachee)	—	1889.2.1.3572–81	—	—	—	—	—	—	—	—	—
267. *rudicus* (*Salarias*)	1888, *Proc. zool. Soc. Lond.* : 263 (Kurrachee)	—	1889.2.1.3616–8	—	—	—	—	—	—	—	—	—
268. *steindachneri* (*Blennius*)	1873, *Proc. zool. Soc. Lond.* : 110 (Kurrachee)	2018†, 2079–81	1889.2.1.3582	B 8003	—	—	1705	3659	—	—	—	—
269. *striatus* (*Petroscirtes*)	1888, *Proc. zool. Soc. Lond.* : 262 (Ceylon)	—	1889.2.1.3587	—	—	—	—	—	—	—	—	—
270. *stuhlmanni* (*Salarias*)	1876, *Fishes of India* : 333 (Andamans)	2011	—	—	—	—	—	—	—	—	—	—
CLINIDAE												
271. *halei* (*Crossiechis*)	1888, *Fishes of India, Suppl.* : 799 (Colombo)	—	—	—	—	—	—	—	—	—	—	—
272. *indicus* (*Heteclinus*)	1888, *Proc. zool. Soc. Lond* : 264 (Madras)	—	1889.8.17.5	—	—	—	—	—	—	—	—	—
CALLIONYMIDAE												
273. *fluviatilis* (*Callionymus*)	1876, *Fishes of India* : 322 (Hooghly R. at Calcutta)	2083–4	1889.2.1.3557–64	—	—	—	—	—	—	—	—	—
GOBIIDAE												
274. *andamanicus* (*Brachygobius*)	1870, *Proc. zool. Soc. Lond.* : 693 (Andamans)	—	1870.5.18.85	—	—	—	—	—	—	—	—	—
275. *andamanensis* (*Gobius*)	1870, *Proc. zool. Soc. Lond.* : 691 (Andamans)	—	—	—	—	—	—	—	—	—	—	—
276. *batoidea* (*Apocryptes*)	1876, *Fishes of India* : 301, pl. 66 (3) (Moulmein)	2014†	1889.2.1.3472	—	—	—	—	—	—	—	—	—
277. *bleekeri* (*Apocryptes*)	1876, *Fishes of India* : 300, pl. 64 (3) (seas of India)	(103†, 134, 2887)	1889.2.1.3460–1 and 4288–9*	B 7501	—	—	—	—	—	—	—	—
278. *bleekeri* (*Gobius*)	1868, *Proc. zool. Soc. Lond.* : 195 (Madras backwaters)	(2995†)	—	—	—	—	—	—	—	—	—	—
279. *canarensis* (*Ebolia*)	1876, *Fishes of India* : 313, pl. 69 (2) (Mangalore)	2507†, (2094)	—	—	—	—	—	—	—	—	—	—
280. *cantoris* (*Apocryptes*)	1870, *Proc. zool. Soc. Lond.* : 693 (Andamans)	(192†)	1870.5.18.23	B 8336	—	—	—	—	—	—	—	—
281. *criolata* (*Brachygobius*)	1873, *Proc. zool. Soc. Lond.* : 109 (Bombay)	75†, 190–1, (A 222)	1889.2.1.3398–3407	B 8198	—	—	1910	—	—	—	—	10014
282. *elioti* (*Eleotris*)	1888, *Proc. zool. Soc. Lond.* : 262 (Madras)	—	—	—	—	—	—	—	—	—	—	—
283. *fasciatum* (*Stenogobius*)	1876, *Fishes of India* : 299, pl. 64 (7) (Burma)	(147†)	—	—	—	—	—	—	—	—	—	—
284. *glaucus* (*Ctenogobius pfhalmus*)	1876, *Fishes of India* : 306, pl. 65 (3) (Andamans)	168†	—	—	—	—	2009	—	—	—	—	—
285. *gobioides* (*Gobius*)	1869, *Proc. zool. Soc. Lond.* : 516 (Andamans)	(A 216–7 ex.)	—	—	—	—	—	—	—	—	—	—
286. *griseum* (*Stenogobius*)	1878, *J. Linn. Soc. Lond.* **13** : 140 (S. Canara)	2474	—	B 8254	—	—	—	—	—	—	—	—
287. *griseus* (*Gobius*)	1876, *Fishes of India* : 285, pl. 63 (3) (Madras)	1881† (3 ex.), (2827 – destroyed)	1889.2.1.4267–73	B 8300	33905	—	—	4705	—	—	—	—
288. *halei* (*Stenogobius*)	1888, *Fishes of India, Suppl.* : 794 (Ceylon)	(? Colombo Museum)	—	—	—	—	—	—	—	—	—	—
289. *littoralis* (*Eleotris*)	1876, *Fishes of India* : 314 (Andamans)	(111)	—	—	—	—	—	—	—	—	—	—
290. *litoreus* (*Gobius*)	1888, *Proc. zool. Soc. Lond.* : 261 (Madras)	—	1889.2.1.3444	—	—	—	—	—	—	—	—	—
291. *lutea* (*Eleotris*)	1876, *Fishes of India* : 314 (Andamans)	2095	—	—	—	—	—	—	—	—	—	—
292. *madraspatensis* (*Gobius*)	1868, *Proc. zool. Soc. Lond.* : 152 (Madras backwaters)	(180†), A 217, (2820)	1868.4.15.5–8, 1889.2.1.4378–9* and 4301–2*	B 8090	—	—	—	—	—	—	—	—
293. *magniloquus* (*Gobius*)	1876, *Fishes of India* : 296 (Madras)	(159)	—	—	—	—	—	—	—	—	—	—
294. *malabaricus* (*Gobius*)	1865, *Proc. zool. Soc. Lond.* : 27 (Kurriavanoor R., Cochin)	—	1889.2.1.4303*	—	—	—	—	—	—	—	—	—
295. *masoni* (*Gobius*)	1873, *Proc. zool. Soc. Lond.* : 107 (Bombay)	(80† – destroyed), A 218	1889.2.1.3378	B 8089	33926	—	1883	—	—	—	—	—

		Calcutta	London	Sydney	Vienna	Berlin	Leiden	Florence	Leningrad	Chicago	Harvard	Paris
296. *melanosticta* (*Gobius*)	1876, *Fishes of India* : 290, pl. 63 (2) (Madras)	(187†, 219–20)	1889.2.1.3388–97	B 8202	—	—	1886	4704	—	—	—	10018
297. *neilli* (*Gobius*)	1868, *Proc. zool. Soc. Lond.* : 152 (Madras backwaters)	(173†, 79, 158, 2777)	1868.4.15.9, 1889.2.1.4304–9*	B 8312	33897	—	—	4702	—	—	—	—
298. *ocellatus* (*Gobius*)	1873, *Proc. zool. Soc. Lond.* : 107 (Bombay)	189†, 86–90, 208–9	1889.2.1.3367–72	—	33914	—	1856	—	—	—	—	10009
299. *planiceps* (*Gobius*)	1876, *Fishes of India* : 296 (Madras)	—	—	B 8286	—	—	—	—	—	—	—	—
300. *planifrons* (*Gobius*)	1873, *Proc. zool. Soc. Lond.* : 108 (Bombay)	97†	—	—	—	—	—	—	—	—	—	—
301. *punctatus* (*Apocryptes*)	1867, *Proc. zool. Soc. Lond.* : 941 (Madras)	165†	—	—	—	—	—	—	—	—	—	—
302. *sexfasciatus* (*Gobius*)	1876, *Fishes of India* : 285, pl. 59 (4) (Madras)	(2870*†)	—	—	—	—	—	—	—	—	—	—
303. *stoliczkae* (*Gobius*)	1870, *Proc. zool. Soc. Lond.* : 692 (Andamans)	—	—	—	—	—	—	—	—	—	—	—
304. *striatus* (*Euctenogobius*)	1868, *Proc. zool. Soc. Lond.* : 272 (Madras)	104†, (155–7)	1868.5.14.10, 1889.2.1.4287*, 1975.9.30.23*	B 8146	30096	—	1884	4703	—	—	—	? 10007
305. *tenuis* (*Boleophthalmus*)	1876, *Fishes of India* : 305, pl. 65 (1) (Kurrachee)	(150†, 92)	1889.2.1.3482–91	B 7618, B 8037	—	10784	2005	2801	—	—	—	10015
306. *thurstoni* (*Gobius*)	1888, *Fishes of India, Suppl.* : 793 (Madras)	—	1889.2.1.3445	—	—	—	—	—	—	—	—	—
307. *zonalternans* (*Gobius*)	1876, *Fishes of India* : 289 (Adyar R. near Madras)	(109 – destroyed), (110)	—	—	—	—	—	—	—	—	—	—
GOBIOIDIDAE												
308. *buchanani* (*Amblyopus*)	1873, *Proc. zool. Soc. Lond.* : 110 (Calcutta, Moulmein)	76†	—	B 7583	—	—	—	—	—	—	—	—
309. *tenuis* (*Gobioides*)	1876, *Fishes of India* : 319, pl. 69 (3) (Sind)	(2071)	—	—	—	—	—	—	—	—	—	—
ACANTHURIDAE												
310. *aurolineatus* (*Acanthurus*)	1876, *Fishes of India* : 204, pl. 48 (3) (Waltair)	1020†	—	—	—	—	—	—	—	—	—	—
TRICHIURIDAE												
311. *malabaricus* (*Trichiurus*)	1865, *Proc. zool. Soc. Lond.* : 20 (Malabar)	—	1867.5.30.2, 1975.9.30.22*	—	—	—	—	—	—	—	—	—
SCOMBRIDAE												
312. *reani* (*Scomber*)	1870, *Proc. zool. Soc. Lond.* : 690 (Andamans)	1841†, B 109	—	—	—	—	—	—	—	—	—	—
NOMEIDAE												
313. *indicus* (*Cubiceps*)	1870, *Proc. zool. Soc. Lond.* : 690 (Madras)	1584†, 1811	1889.2.1.3255–6	B 8114, I 645	—	—	—	? 2375	—	—	—	—
OSPHRONEMIDAE												
314. *labiosus* (*Trichogaster*)	1877, *Fishes of India* : 374, pl. 79 (4) (Rangoon)	1566†	—	—	—	—	—	—	—	—	—	—
MASTACEMBELIDAE												
315. *guentheri* (*Mastacembelus*)	1865, *Proc. zool. Soc. Lond.* : 37 (Trichoor)	2150†, (2993)	1865.7.17.26–7, 1975.9.30.24*	—	—	—	—	—	—	—	—	—
BOTHIDAE												
316. *aureus* (*Citharichthys*)	1877, *Fishes of India* : 422, pl. 90 (3) (Madras)	1243†	—	—	—	—	—	—	—	—	—	—
SOLEIDAE												
317. *elongata* (*Solea*)	1877, *Fishes of India* : 426, pl. 90 (4) (Madras)	(2714†, 1091, 1094)	—	—	—	—	—	—	—	—	—	—
CYNOGLOSSIDAE												
318. *brevirostris* (*Cynoglossus*)	1877, *Fishes of India* : 437, pl. 97 (6) (Madras)	2690†	—	—	—	—	—	—	—	—	—	—
319. *buchanani* (*Cynoglossus*)	1869, *Proc. zool. Soc. Lond.* : 522 (? Calcutta)	(A 463)	—	—	—	—	—	—	—	—	—	—
320. *dispar* (*Cynoglossus*)	1877, *Fishes of India* : 434, pl. 96 (2) (Bombay, Madras)	1141, (1144†)	1889.2.1.4062–3	—	43774	—	3565	—	—	—	—	—
321. *dubius* (*Cynoglossus*)	1873, *J. Linn. Soc. Lond.* **11** : 525 (Gwadur)	1142†	—	—	43775	—	—	—	—	—	—	—
322. *quinquelineatus* (*Cynoglossus*)	1877, *Fishes of India* : 432, pl. 98 (1) (Madras)	1265†	—	—	—	—	—	—	—	—	—	—
323. *semifasciatus* (*Cynoglossus*)	1877, *Fishes of India* : 436, pl. 97 (5) (Madras)	2692†	1975.9.30.25*	—	—	—	—	—	—	—	—	—
324. *sindensis* (*Cynoglossus*)	1877, *Fishes of India* : 434, pl. 90 (6) (Sind)	(? 2715)	—	—	43817	—	—	—	—	—	—	—
BALISTIDAE												
325. *ellioti* (*Balistes*)	1889, *Fauna Brit. India, Fishes*, **2** : 478 (Madras)	—	—	—	—	—	—	—	—	—	—	—
TETRAODONTIDAE												
326. *cochinensis* (*Crayracion*)	1865, *Proc. zool. Soc. Lond.* : 314 (Cochin)	(2223†)	—	—	—	—	—	—	—	—	—	—
327. *leopardus* (*Tetrodon*)	1878, *Fishes of India* : 706, pl. 180 (2) (seas of India)	(2260)	—	B 7722	—	—	—	—	—	—	—	—
328. *viridipunctatus* (*Leiodon*)	1865, *Proc. zool. Soc. Lond.* : 315 (Cochin)	(7153)	—	—	—	—	—	—	—	—	—	—

BIOGRAPHICAL APPENDIX

Notes on the Day family

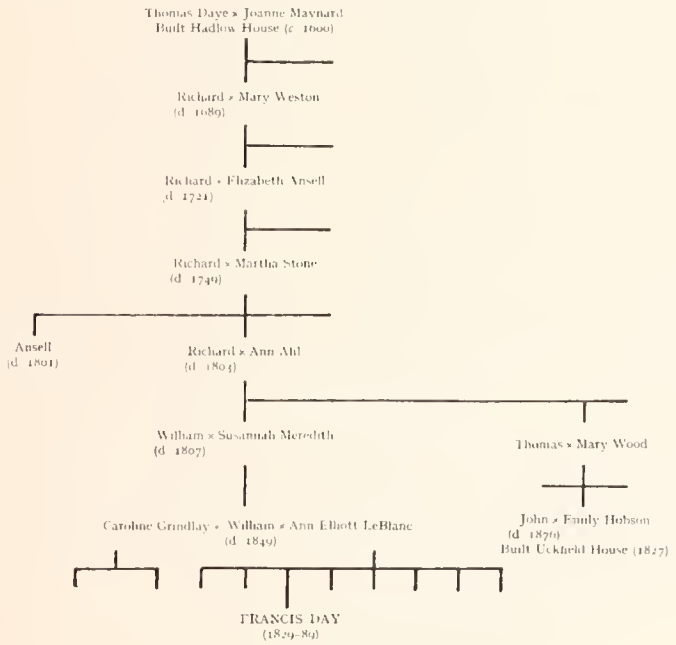
Although incomplete, the following biographical data have been used in the text. Numbered sources are given at the end; other sources abbreviated as before (see p. 16). We also give two genealogical trees which have been simplified from two versions kindly made available to us by the Egerton family (Eg. 4).

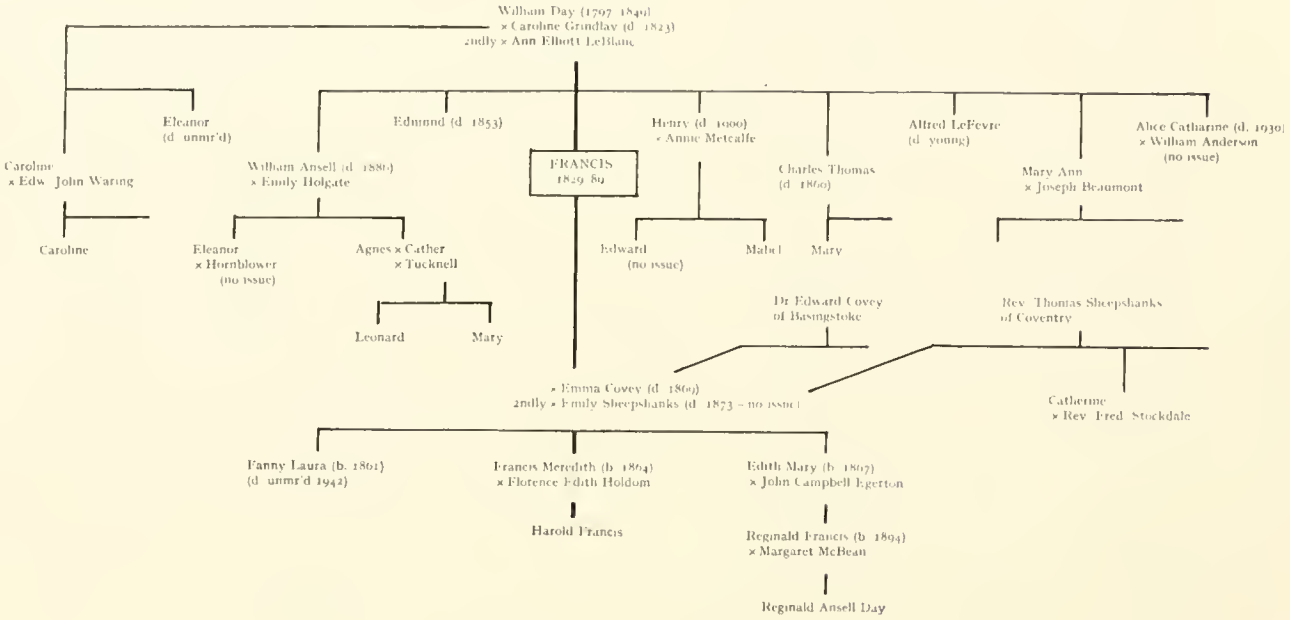
The Days of Hadlow House, Mayfield Parish (since 1905, Hadlow Down Parish), Sussex

Originally Daye, but final 'e' dropped (e.g. Ansell Day in 1750)[7]; Squires of the Manor of Hadlow Down[6], for at least two centuries[7]; house sold in the 1860s and in the possession of John Haskins by 1867[5].

William Day (d. 1807), excellent but neglected artist (Egerton, 1970), member of Society for Promoting Natural History in 1796 (LS.MS.), mineral collector, his specimens and those of his son given to Central Library Finchley Road, London[7] (? = 2 boxes now in Church Farm House Museum, Hendon[16]); some of his paintings inherited by his grand-daughter Alice Catharine Day and left to Hastings Public Library[15]; grandfather of FRANCIS DAY.

William Day (b. 1797; d. 1849), son of above and keen mineral collector[7]; lived at Maresfield 1832 or 1833[6] (and by deduction 1834[3]); at Hadlow House,




William Day (1797–1840)
× Caroline Grindlay (d. 1823)
2ndly × Ann Elliott LeBlanc
Eleanor (d. unmr'd)
Edmund (d. 1853)
Henry (d. 1900) × Annie Metcalfe
Alfred LeFevre (d. young)
Alice Catharine (d. 1930) × William Anderson (no issue)
Caroline × Edw. John Waring
William Ansell (d. 1880) × Emily Holgate
FRANCIS 1829–89
Charles Thomas (d. 1860)
Mary Ann × Joseph Beaumont
Caroline
Eleanor × Hornblower (no issue)
Agnes × Cather × Tucknell
Edward (no issue)
Mabel
Mary
Leonard
Mary
Dr Edward Covey of Basingstoke
Rev. Thomas Sheepshanks of Coventry
× Emma Covey (d. 1869) 2ndly × Emily Sheepshanks (d. 1873 – no issue)
Catherine × Rev. Fred. Stockdale
Fanny Laura (b. 1861) (d. unmr'd 1942)
Francis Meredith (b. 1864) × Florence Edith Holdom
Edith Mary (b. 1867) × John Campbell Egerton
Harold Francis
Reginald Francis (b. 1894) × Margaret McBean
Reginald Ansell Day

Mayfield by 1841 (by deduction[3]), owning two thousand acres in Mayfield, Hadlow Down, Rotherfield and Framfield, comprising farms with forty tenanted cottages[7]; married (18 August 1819) Caroline Grindlay at St Margaret's, Westminster[1] (buried 31 July 1823, aet. 28[2]); two daughters, Eleanor (b. 13 March 1823[2]) and Caroline (b. ? 1821, who married Edward Waring); married 2ndly (about 1825) Ann Elliott[3, 8] (b. London) (as Ann Le Blanc in DNB. and CE.; Colonel Le Blanc her uncle[7]); farms and cottages managed by his wife after his death[7]; five sons and two daughters, of which the third son was FRANCIS DAY.

William Ansell Day (b. 2 August 1826[2]; d. 12 June 1886[11]); educated Shrewsbury, 1836–42; solicitor in London, admitted 1849, probably practised alone, then with Montague L. C. Cather as Day & Cather (around 1879)[10]; wrote book on the Russian Government in Poland (Day, W., 1867); married Emily Holgate and had daughters Eleanor and Agnes.

Edmund Day (b. Maresfield, 1 January 1828[2]; d. Adelaide, Australia, 1853, aet. 25[7]); studied as mining engineer, went out to Australian gold fields in 1851 or 1852[7]; window in Mayfield Church[6].

FRANCIS DAY (b. Maresfield, 2 March 1829 – DNB.; baptized 28 March 1829[2]; d. Cheltenham, 10 July 1889[11]); author of *Fishes of India*, *Fishes of Great Britain*, etc.; married at Basingstoke (3 November 1857[11]) Emma (b. *c.* 1836; d. 1869 – DNB.), daughter of Dr Edward Covey (1806–61) of Basingstoke[11]; married 2ndly at Coventry (13 April 1872 – DNB.) Emily (b. 27 January 1850 – FRMMF.; d. 1872 – DNB.), daughter of the Rev. Thomas Sheepshanks, Vicar of St John's in Coventry (DNB., Muir, 1955); by first marriage, Francis Day had two daughters and a son.

Fanny Laura Charlotte Day (b. 24 November 1861 – FRMMF.; d. Cheltenham, 29 July 1942[13]); lived at 10 Montpellier Grove, Cheltenham, in 1892–94[12]; at Auburn, Hatherley Road, Cheltenham in 1924[13]; and at Fairmount, Fairmount Road, Cheltenham in 1942[13].

Francis Meredith Day (b. London, 18 April 1864 – FRMMF.; d. ?); articled 13 September 1882 to W. M. Wilkinson, solicitor, of Kingston on Thames, admitted 1888, practised alone (Wolverhampton, London) 1888–92[10]; married at Fenny Stratford, Buckinghamshire (10 November 1891[11]) Florence Edith, daughter of the late Thomas Holdom; no practising certificate 1892–1908, then practised alone (London) 1908–10, struck off Roll in 1911[10]; living at King's Lynn, Norfolk, in 1924[13]; at least one son.

Harold Francis Day (b. 11 June 1899[11]).

Edith Mary Day (b. 30 October 1867 – FRMMF.; d. March 1914) married at Chedington, Dorset (17 October 1893[11]) John Campbell Egerton (FRMMF.), painter, and had son.

Reginald Francis Egerton (b. 1894), married in Honolulu (October 1919) Margaret Falkiner McBean and had one son.

Reginald Ansell Day Egerton (b. July 1925).

Henry George Day (b. Maresfield, 14 September 1830[8], baptized 11 October 1830[2]; d. West Brighton, 10 February 1900[8]); educated Shrewsbury and St John's College, Cambridge (5th Wrangler; Classics Tripos, 1st Class), B.A. 1854, Fellow 1855–63[8]; ordained deacon 1859[8]; Assistant Master at Brighton College 1859–61, Headmaster Sedburgh Grammar School 1861–74[8]; author of *Geometrical conic sections; the ellipse*, 1868[8]; married Annie Metcalfe and had at least one son and daughter.

Edward Metcalfe Day (b. Ravenstonedale, Westmorland, 9 April 1865[8]); educated Brighton College and St John's College, Cambridge, B.A. 1887[8].

Charles Thomas Day (baptized Maresfield, 29 January 1833[2]; d. Ottawa, Canada, 1860, aet. 27[6, 7]); at Hadlow House, Mayfield in 1851[3]; window in Mayfield Church[6]; at least one daughter[14], Mary Day.

Mary Ann Day (b. St Chad, Shrewsbury, 1841[3]); at Hadlow House, Mayfield in 1851[3]; married Joseph Beaumont and living at Riverdale House, Richmond, in 1875 (letter to Peters, ZMB.MS.); at Houston House, Barnes, in 1889[14]; children Mabel, Mary, John, Noel and William[15].

Alice Catharine Day (b. Hadlow House, Mayfield, 1849[3]; d. 17 December 1930); early childhood at Hadlow House, later at Brighton[7]; lived in Mayfield area 1874–92[7]; friend of Harold Nelson Burden, assistant college chaplain at Cambridge, associated with his missionary work on Manitoulin I., Lake Huron, in about 1890 (Day, A., 1890; her Preface to Burden, 1895); at West Hadlow, Buxted, Sussex, in 1889[14]; revisited Mayfield area in 1908 and 1927–28, resulting in book on rural life (Day, A., 1928; by this time married to William Austen Anderson of Canada); competent watercolour artist (see above, p. 109); no children.

The Day crest, coat-of-arms and motto

On his letterheads and envelopes Day had embossed the following device: two hands clasping each other couped at the wrists and conjoined to a pair of wings proper each wing charged with a mullet or. Day (quite wrongly) placed this crest within a shield. The crest appears to have been that used by the Day family of Carmarthen and Salop. Above the crest he placed the motto *Sic itur ad astra*, which seems to have stemmed from two families of Day in Ireland (Cork and Kerry). The coat-of-arms used by the Days of Berkshire, Buckinghamshire, Sussex and the Isle of Ely is blazoned: per chevron or and azure three mullets counterchanged. These arms were used by William Ansell Day (brother of Francis) and they appear in a window to William Day (grandfather) with the date 1797 in Mayfield church and also in a mural to John Day (1876) (great-uncle) and his wife Emily (1894) in Uckfield church (*Sussex Archaeological Collections*, 67 – 1926).

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BRITISH

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PLATE 1

Francis Day as a young man, taken during his stay on the Isle of Wight in 1865-66; right, drawing from a photograph taken in middle age (see p. 20 for details).

DEPUTY SURGEON-GENERAL FRANCIS DAY
Died July 10, 1889. Aged 60

PLATE 2

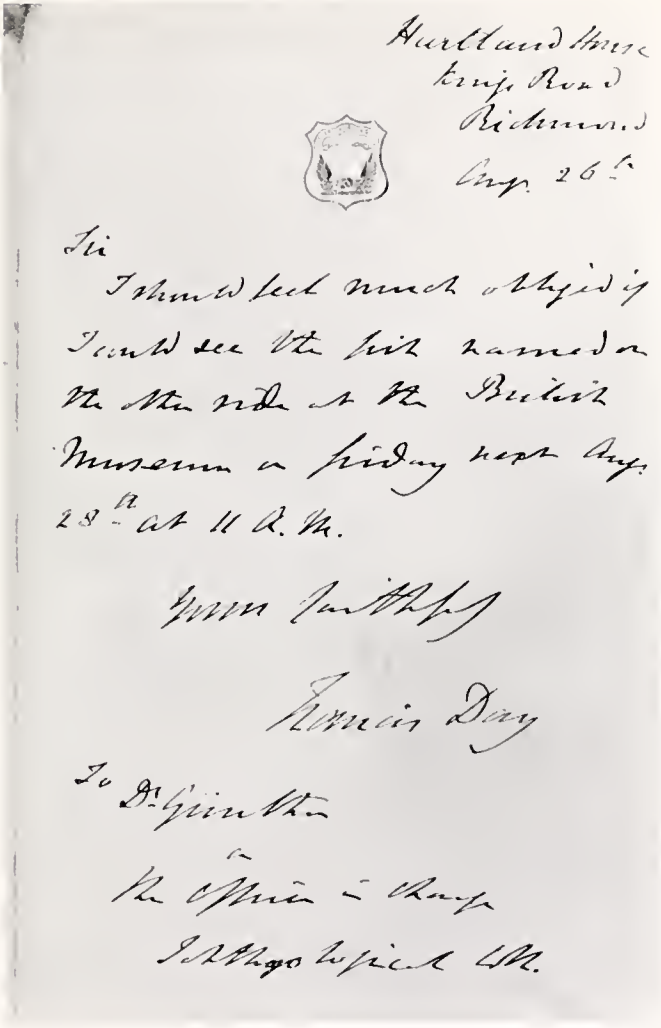
Francis Day during his later years in Cheltenham (see p. 20 for details).

PLATE 3

Hadlow House in Sussex, the Day family home until the 1860s ; below, Kenilworth House, Francis Day's final home in Cheltenham.

PLATE 4

Sample of Francis Day's handwriting; one of numerous formal requests to Albert Günther for permission to examine fishes at the British Museum.



Hartland House
King's Road
Richmond
Surrey 26th

Sir

I should feel much obliged if I could see the bird named on the other side at the British Museum on Friday next Aug. 28th at 11 A.M.

Yours faithfully

Francis Day

To Dr. Günther
&c &c &c
British Museum W.

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EDWARD WHITAKER GRAY (1748–1806), KEEPER OF NATURAL CURIOSITIES AT THE BRITISH MUSEUM

A. E. GUNTHER

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
HISTORICAL Vol. 5 No. 2
LONDON: 1976

EDWARD WHITAKER GRAY (1748–1806), KEEPER OF NATURAL CURIOSITIES AT THE BRITISH MUSEUM

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ALBERT E. GUNTHER

Pp. 191–210 ; 5 *Plates*

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EDWARD WHITAKER GRAY (1748–1806), KEEPER OF NATURAL CURIOSITIES AT THE BRITISH MUSEUM

By A. E. GUNTHER

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INTRODUCTION

Edward Whitaker Gray (1748–1806) was the great-uncle of John Edward Gray (1800–1875), the outstanding Keeper of the Natural History Collections at the British Museum; in fact J. E. Gray achieved the position over thirty years after his uncle's death.[1] The uncle's life is of interest to us because it was part of the tradition absorbed by John Edward from scraps of hearsay remembered from his parents. Although the outline of Edward Whitaker's career is documented, far less is known about the man himself than about his great-nephew. Knowledge of a doctor, naturalist and administrator of only moderate distinction such as Gray, has thus to depend as much on what is known of the men and institutions with whom he came into contact, as on the evidence of documents from his hand.

EARLY YEARS

Edward Whitaker Gray was the second son of Samuel Gray IV (1694–1766), second in the line of Seedsman of the Black Boy, Pall Mall, (who had added to his prevailing seed business the import of plants from Holland). Of his two sons, Samuel Gray V (1735–1771) carried on the business and, being of a studious nature, made a translation of Linnaeus' *Philosophia Botanica*, which likewise became an item in John Edward Gray's familial academic tradition. Samuel's younger brother, Edward Whitaker, thirteen years his junior, chose the medical profession of surgeon and apothecary, and the first we know about him (Gray, J. E., *c.* 1862–74 : f. 53) is that he attended the anatomical school of Dr William Hunter (1718–1783), elder brother of the more famous John Hunter (1728–1793) who founded the museum at the Royal College of Surgeons.

To join William Hunter's school was the privilege of the well-to-do. A family in the Gray's position, which looked beyond success in trade to a place in society,

[1] E. W. Gray and J. E. Gray were two of six members of the Gray family to be included by G. S. Boulger in the *Dictionary of National Biography*, 1890, **23** : 7–9.

would want their son to enter a profession. What better than that he should have the advantage of discourses by a leading surgeon, whose declared policy was that instruction in anatomy should be given through dissection, as it was in Paris, and who had established a reputation as much for the clarity of his exposition as for his learning? If Edward Whitaker Gray had started his training at the age of 15 or 16, he would have found William Hunter still lecturing in Lichfield Street, off Cambridge Circus, but planning the erection of a more adequate School of Anatomy to be built in Great Windmill Street, off what was then Piccadilly (now Shaftesbury Avenue), to which he moved in 1767 (Peachey, 1924 : 114). When completed, the plain brick building, which still stands as part of the Lyric Theatre, contained not only all that was needed in the way of an amphitheatre and rooms for lectures and dissections, but also 'a magnificent room fitted up with great elegance and propriety as a museum'. William Hunter, like his brother, formed one of the great collections of the day, not only of anatomical and pathological preparations, but of coins, medals, minerals, shells, corals and other natural history specimens, as well as a library of rare Greek and Latin works, which have been described as they stood in 1783 (Simmons, 1783 : 57–62), and all of which Hunter left to the University of Glasgow (Laskey, 1813). It was against this background of interest and culture, beyond what his training called for, that Gray spent the later years of his medical education and, being an affluent young man, evidently came to see that there were other ways of spending his life than in humdrum medical practice. In the event, he did not spend longer as a surgeon and apothecary than he found convenient. It may be assumed, then, that Hunter's interest and friendship, retained in later life, may have turned Gray's interests towards natural philosophy and kindled a desire to join an institution devoted to it. This eventually led him to seek a niche in the British Museum, the first of seven members of the Gray family in the next 150 years to enter its service.

In 1771, at the age of 23 and having completed his studies, Gray was admitted as a member of the Royal College of Physicians, then in Warwick Lane in the City and, applying for the post of Beadle, was elected on 30 September (Anon., 1781 : 8). Although there is no mention of Librarianship when he 'gave his Faith to the College', exactly a year later we learn that

> Mr Gray acquainted the College that all the Books were in the Library (30 September 1772 – Anon., 1781 : 18).

In 1773, however, a Declaration of Trust of 25 June (Anon., 1781 : 30) records that E. W. Gray, of the City of London, Gentleman, was appointed Beadle and Librarian for which he surrendered a bond of £200 in East Indian Annuities in the books of the Government and Company of English Merchants trading in the East Indies. All this tends to show Gray as a young man without the immediate need to earn a living who wished to indulge an interest in books, and who could afford a bond from his own or his parents' pocket. As Librarian it was his duty :

> . . . carefully diligently according to the best of his powers keep and preserve all the books, plate and household stuff belonging to the said [persons representing the President and College].

With the transfer of the securities on 30 June 1773, Gray entered on his duties and resigned as Beadle.

That Gray had, in fact, been engaged in library work since 1771 is suggested from his being paid his salary in August 1773 as 'Librarian and Beadle' for the previous year, an amount of £28 . 7 . 9.

That same month, on 6 August 1773, he 'attended to be examined as an extra-Licentiate' and, on being approved by the President and three Electors, had 'Letters Testimonial signed and sealed granted to him according to Statute' (Anon., 1781 : 30–32). This extra qualification was necessary for a man who wished to practice outside a radius of seven miles from London. If, at the age of 25, Gray already had the intention of applying for a practice abroad this was an essential step.

What drew Gray to Portugal must remain a matter of conjecture. A young surgeon and apothecary who had no need to engage in routine medical practice would seek a position where he could both engage in his profession and pursue his interests in natural history. Where better than in an established institution in a friendly country within some days sailing from Bristol or Falmouth? In the 1770s, ten years after the end of the Seven Years War (1756–1763), English influence in Portugal had never stood higher, or its medicine in greater repute. This was largely due to the year of service William Hunter had given during the war, both with the British army (he opened a military hospital in Lisbon in 1762) and among the Portugese, who, having no medical service of their own, founded a chair of surgery at Lisbon in 1764 and sent their students to William Hunter's school in London, or to Edinburgh, for training. For a medical post in Portugal, therefore, William or John Hunter's name served as a powerful recommendation, for although both were frugal in their habits, John taking no wine, they could hardly have escaped contact with the wealthy in the wine trade.

The English merchants who traded with Oporto had long been favoured by the Portugese Crown with a gift of land on which they had built a Factory House out of their own resources. In addition an Act of Parliament had made it obligatory for them to relieve shipwrecked mariners and distressed British subjects through the support of a hospital and a minister of religion. Of the years between 1773 and 1778 that Gray spent at Oporto, at the Factory House as surgeon at its hospital, next to nothing is known since its archives do not extend back beyond 1812 (Anon., 1975).

Late in 1773, or in 1774, Gray wrote to Mr Joseph Banks, as he was then, that he was leaving for Oporto and he enquired whether there was any service he could perform (Gray, E. W., 1773). All that is known of the sequel is that in 1777, the year before Gray's return to England, Banks was sent a collection of plants (Britten & Boulger, 1931). Otherwise the record of Gray's doings is limited to the little John Edward Gray was told, namely that his uncle had returned from Portugal with a 'collection of Natural Productions of that country' (*Dict. natn. biogr.* 1890, **23** : 7), and particularly of amphibia – a reference J. E. Gray may have culled from a letter Johann Fabricius (1745–1808) of Kiel wrote from London during a visit in 1782 (Fabricius, 1784). But in John Edward's eyes, all that he had heard about his

uncle fully justified his appointment to the British Museum at Montagu House as a logical sequence in his career as a naturalist.

A year or so after reaching Oporto Gray married Elizabeth Beazeley and had two daughters there, and a son after his return to England.[2] But it was J. E. Gray's opinion that marriage did not suit his great-uncle, who went so far as to dissuade his nephew, Samuel Frederick, from marrying on pain of losing the job he held at the time with Dr Robert Nares (1753–1829), philologist and editor; being a man with a mind of his own, lose his job Samuel Frederick did (Gray, J. E., *c.* 1862 : f. 3).

In 1778, after four years at the Factory House, Gray evidently decided not to return to Portugal, and looked around for occupation. Since his name was not in the *Medical Register* for 1779 (the first issue), medicine may have been closed to him, but it appears in the 1780 and 1783 issues, but not again. In the last, he is entered as residing at the British Museum and as a F.R.S., but also as Treasurer and Secretary of the Society for the Improvement of Medical Knowledge. This Society was established in 1780 for the purpose of reading papers and to dine once a quarter at the Old Slaughter's Coffee-House, but it did not have a long life, and nothing more is heard of Gray's activities in it.

In this period Gray also became a member of a Philosophical Society which was active from about 1780 and was named only after the coffee-houses in which it met, such as The Chapter, The Baptist's Head, or at the house of Adam Walker, Hanover Square, one of the members, but their number did not include men of distinction like the Hunters or Sir Joseph Banks. The Society does not seem to have existed after 1788. From about 1780, then, one must assume that Gray's work at the British Museum filled his time and that he therefore dropped out of medical and philosophical circles. (Musson & Robinson, 1969; Gunther, R. T. 1936.)

BRITISH MUSEUM

Of Gray's appointment to the British Museum at Montagu House nothing more is known than what J. E. Gray records, that the appointment was made on the recommendation of Dr William Hunter (Gray, J. E., *c.* 1862–74 : f. 53). If Gray was fortunate in securing such a niche, he was even more so in the sequence of events that, within nine years, brought him the keepership of the natural history collections. Until 1772, the Department of Natural and Artificial Productions, as it was called, had been in the charge of Dr Matthew Maty (1718–1776), a doctor of medicine from Leyden. When made Principal Librarian, Maty was succeeded by Dr Daniel Solander (1736–1782), a Swede, pupil of Linnaeus, botanist, scholar and compiler of catalogues, who in 1768 was given three years' leave of absence to act as scientific companion to Sir Joseph Banks on Captain Cook's first voyage round the world. Being fully occupied on his return, both with Sir Joseph's library and with the botanical collection secured during the voyage (at the expense of his Museum duties), Solander was given two assistants, in 1773, J. O. Justamond,

[2] Juliana (1775–1837), Elizabeth (1777– ?), and Francis Edward (1784–1810); also William Herman (1794 ob. inf.).

son-in-law of Dr Maty, a writer and translator, who was to do literary work for him, and in 1776, the Rev. Paul Henry Maty (1745–1787), Dr Maty's son.[3]

The younger Maty was one of a Cambridge group who, influenced by doubts during a period of intellectual enlightenment, subscribed in 1772 to a petition which attempted to get Parliament to amend the terms of subscription in the universities from the Thirty Nine Articles to something simpler; being of a cantankerous disposition, he resigned the ecclesiastical office he held at Cambridge and refused to accept another such office elsewhere. It was evidently a case of a temperamental obstinacy finding an outlet for its expression, which not only made for difficulties with Gray in the Museum, but re-emerged in 1784 when he resigned as Senior Secretary of the Royal Society in a dispute with the President. So, with Justamond's dismissal in 1778, and with Gray returned from Portugal and waiting in the wings, the way was open for Gray's appointment under Maty.

In 1782, Solander's premature death, as great a loss to the Museum as to science, left Maty in the Keepership, and with Maty's death in 1787, Gray, at the age of 42, stepped into his shoes.

Gray's nineteen years as Assistant and Keeper of the natural history collections at Montagu House were not marked by any particularly noteworthy event, nor, on his part, by any contribution to science or literature to equal those made by his predecessor, Daniel Solander, nor even by his successor, George Shaw (1751–1813). Nor do the Trustees Minutes do much to make good the general lack of information about progress within the Department. Such information as there is deserves to be put on record, not because it is in itself important, but because it tells us a little more about what sort of a man, and what sort of a naturalist, Gray was.

With Solander as Keeper, whether or not fully attentive to his duties, Antiquities would have been left to Maty, but with Maty's assumption of the Keepership in 1782 there seem to have been differences in the reports submitted by him and by Gray,[4] although what these differences were the Trustees Minutes do not make clear. At all events we suddenly find Gray engaged in rearranging the Bird Room, his first recorded task, which occupied him for the next two years. This was the first time that an attempt was made to order, according to the Linnean system, the large number of birds added to the collections by gift and by purchase, particularly by Matthew Maty in 1769–70. This earned Gray £50 from the Major Edward's fund[5] for his extra trouble,[6] for Gray had been in the Museum for about eighteen months before a new order required Officers 'to arrange the contents of their several departments'; presumably this had previously been left to the Attendants.[7]

In 1784, following what reads as a rather high-handed reply to the Trustees about extra fees, which only a man of private means would have ventured, Gray turned his attention to the Insect Room. The Trustees had ordered

[3] *Dict. natn. biogr.*, 1894, **37**: 78 (Maty, P. H., written by T. Seccombe).

[4] Information cited from the British Museum Trustees Minutes is indicated by footnotes, where GM = General Meetings and C = Committee Meetings, each followed by a Minute number. BM. Trustees Minutes, 1784, GM. 656, 844 *et seq.*

[5] Major Arthur Edwards made a bequest in support of the Cottonian Library, which was subsequently diverted to more general uses, and Natural History was a frequent beneficiary (Edwards 1870: 305).

[6] BM. Trustees Minutes, 1784, C.1859.

[7] BM. Trustees Minutes, 1802, GM.958.

> That during the vacation the maids clean the glass of the several cases in the Natural History and Antiquity Rooms ; and that the contents of those Rooms be also cleaned as far as may be done with safety under the inspection of the Officers of that department.[8]

Further, Gray was to report on the 'cleaning, classing and labelling the contents of the Insect Room' and to advise whether a case could be made for the sale of the duplicates in the 'base story'. In his reply, Gray felt unable to make 'an accurate proposal' unless the Trustees would 'make him an adequate allowance for the trouble' involved and, presumably being assured they would, he spent the next two and a half years in arranging the insects.[9] For this, in January 1787, he was paid £200, the Trustees acknowledging

> . . . his great care and assiduity and in consideration of the length of time he has given to and the skill with which he has completed the work.[10]

In the meantime the duplicates in the 'base story' (a headache to Officers and Trustees alike for as long as Montagu House existed, and for longer even than that) were allowed to remain there until an assistant arrived in the person of Dr George Shaw in 1791, when they became his first assignment.[11]

There is, during the period of Gray's assistantship, only one record of the opinion of his work outside the Trustee's Minutes, and that comes from a foreign source. It was made during the visit in July 1782 of Dr Johann Christian Fabricius, the Danish entomologist and professor of natural history at Kiel, who was in London calling on such notables as Sir Joseph Banks and William Hunter. In a number of *Briefe aus London* (addressed to friends, unnamed) he mentions Lord Stormont (1727–1796)[12] recommending P. H. Maty, who had been his lordship's chaplain while attached to the French court.

> In his [Solander's] place there has been appointed a man of great knowledge in Dr Matty [sic], but in the field of science he is an amateur. Lord Stormont's recommendation overlooked the knowledge of Dr Gray who is really the only person in the Museum who has any idea of natural history, and who would make a claim on Solander's place . . . but things work out in England much as they do in other countries . . . .
>
> [Dr Gray] has worked in Amphibia, and though he has many specimens in spirits, there remains much to be done.[13]

With Maty's death early in 1787 and Gray's promotion as Under-Librarian (as Keeper of the Department of Natural and Artificial Products), as well as his appointment as Secretary to the British Museum, together with the papers he was writing

[8] BM. Trustees Minutes, 1784, C.1873/4.
[9] BM. Trustees Minutes, 1784, C.1880.
[10] BM. Trustees Minutes, 1787, C.1943.
[11] BM. Trustees Minutes, 1791, C.2033, 2044.
[12] *Burke's Peerage*, 1970. Mansfield and Mansfield. David, 7th Viscount Stormont and 2nd Earl Mansfield, p. 1748. See also *Dict. natn. biogr.* 1894, **39** : 355 (Murray, David, written by J. M. Rigg).
[13] Fabricius, 1784 : 80, 81, 122, 123. A free translation. The author was not well informed, and there is no purpose in quoting an inaccurate version.

for the Royal Society's *Transactions*, Gray evidently had little time for working on the collections, and until 1799 the Minutes are silent on this aspect of his duties.[14]

Gray, like other senior officers in the Museum, was obliged to give a portion of his time to general administration and one of his tasks was to screen potential readers and to supervise the Reading Room. It was, however, a chance that couples Gray's name with that of Warren Hastings (1732–1818), the Indian administrator who had succeeded Clive as the first Governor-General. In 1798 it was Gray, as Secretary of the British Museum, who signed the acknowledgement on behalf of the Trustees of Hastings' gift to the Library of the 'Debates in the House of Lords on the Trial of Warren Hastings Esq. etc.' and in 1801, as Secretary of the Royal Society, Gray signed the certificate of Hastings' election on 26 June (B.M. MSS. 1, 2).

In 1799 two of the most important collections that were to come to the Museum in this period fell to Gray's responsibility : the Hatchett Mineral Collection (Anon., 1904) by purchase out of the Edwards' fund, and the Cracherode collection, by bequest, of books, manuscripts and their first substantial acquisition of shells. Work on the Hatchett Mineral collection (some 7000 specimens purchased for £700) provided the foundation of the Museum's collection and occupied Gray for the best part of three years, for which he was paid the sum of £150 'for his labours as had heretofore been allowed to Officers for similar services'. After that, Gray was authorized to procure the assistance of the Count de Bournon (1751–1825), at the time exiled in London, who worked on them until Gray's demise.[15] The Cracherode shell collection was accompanied by a catalogue made by Mr George Humphrey, the dealer who purchased the shells. This was edited about 1801 by Gray, who added Linnaeus' names from Gmelin's 13th edition of the *Systema Naturae* (1788 or 1789), and for some time it was attributed to Gray in error (Gray, E. W., *c.* 1801). In 1802 Gray was seeking permission to make changes in the room which was to include fossils and shells.[16]

Although from 1791, for the next fourteen years, Gray had the assistance of Dr George Shaw,[17] the records do not bring their names together. Shaw, only three years younger than Gray, was a man of parts, a naturalist by calling who may have found a want of sympathy in his more conventional chief. Trained in Oxford for the church, in Edinburgh for medicine, returning to Oxford to lecture in botany, Shaw later engaged in medical practice in London while collaborating with James Edward Smith and James Sowerby as the zoologist in various joint publications. At Montagu House, desiring to attract an audience to his work, he sought the permission of the Trustees to give lectures in the 'base story', but

> . . . the Trustees do not think themselves justified of giving permission for the reading of lectures in the walls of this House.[18]

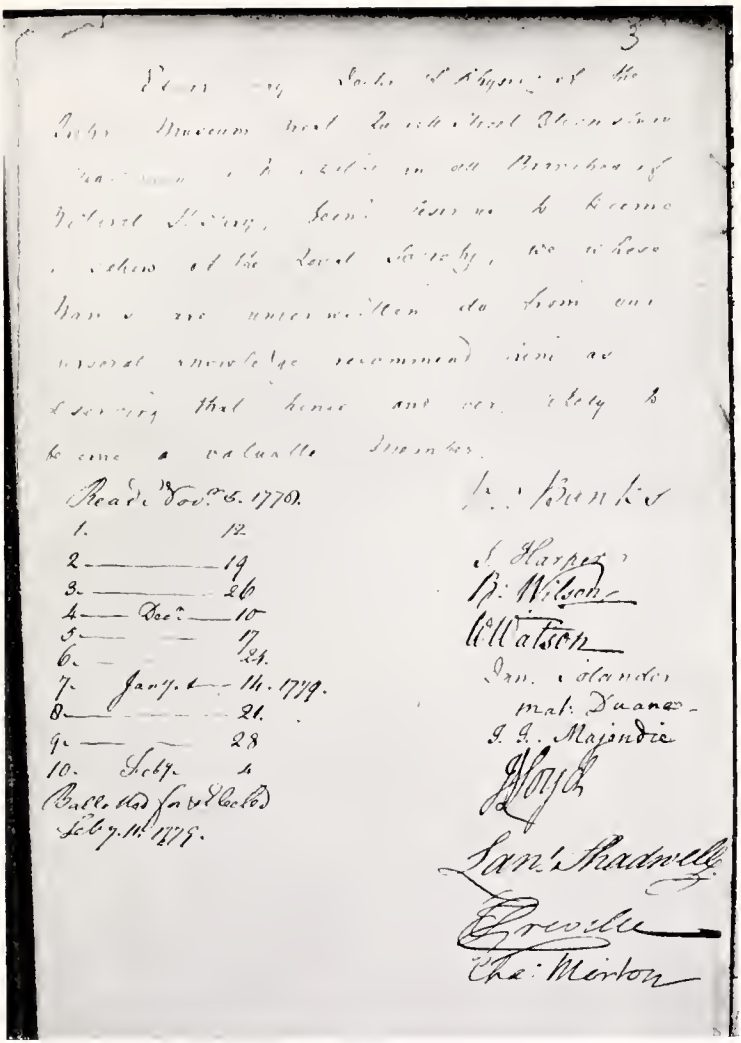
[14] BM. Trustees Minutes, 1787, C.1946.
[15] BM. Trustees Minutes, 1803, C.2233.
[16] BM. Trustees Minutes, 1802, GM.958.
[17] *Dict. natn. biogr.*, 1897, **51** : 436 (Shaw, George, written by B. B. Woodward). See also *Gent. Mag.*, 1813 (2) : 290.
[18] BM. Trustees Minutes, 1795, C.2106.

PLATE 1

Edward Whitaker Gray. Portrait by Sir Augustus Wall Callcott (1779–1844), presented to the Royal Society by the artist in 1830.

PLATE 2

E. W. Gray. Certificate of Election to the Royal Society, 11 February 1779.



3

Read 2d Nov.r 6. 1770.

1. 12.
2. 19
3. 26
4. Dec.r 10
5. 17
6. 24.
7. Jan.y 1. 14. 1779.
8. 21.
9. 28
10. Feb.y 4

Read and Laid & Ordered
Feb.y 11. 1779.

J. Banks

J. Harper
P: Wilson
Wm Watson
Jam. Colander
mal: Duane
J. G. Majendie
J Wolfe
Sam.l Shadwell
Crewe
Tho: Morton

PLATE 3

E. W. Gray Handwriting and signature. Letter to Sir Joseph Banks, 3 September 1802 (B.M. Add. MS 33018, f. 59)

Dear Sir

My endeavours to ascertain by searching the books at Somerset Place whether the Croonian Lecture can be read by any but a Fellow of the Society, have been fruitless: it does not appear that there exists any extract of the Will or other Document by which the Question can be determined. It is however very clear, that neither the Croonian nor the Bakerian Lecture have yet been read by Persons who were not Fellows of the Society; and there is an extract from Baker's Will, which states positively that the Lecturer must be a fellow of the Society. To argue from analogy therefore, we must suppose the case the same with respect to the Croonian Lecture, which is the more unlucky as my friend Mr. Pearson would willingly have undertaken the task of supplying one. I have however the promise of a Bakerian Lecture from Dr. Wollaston, so that we shall at least have something to begin with.

I have looked over the Paper on Optics sent to Mr. Planta from Italy, and am convinced it is not worth meddling with, unless in a case of absolute necessity, to which I hope we shall not be driven: besides other objections, the author expects the Society will repeat his ill contrived experiments, and send him their opinion of them.

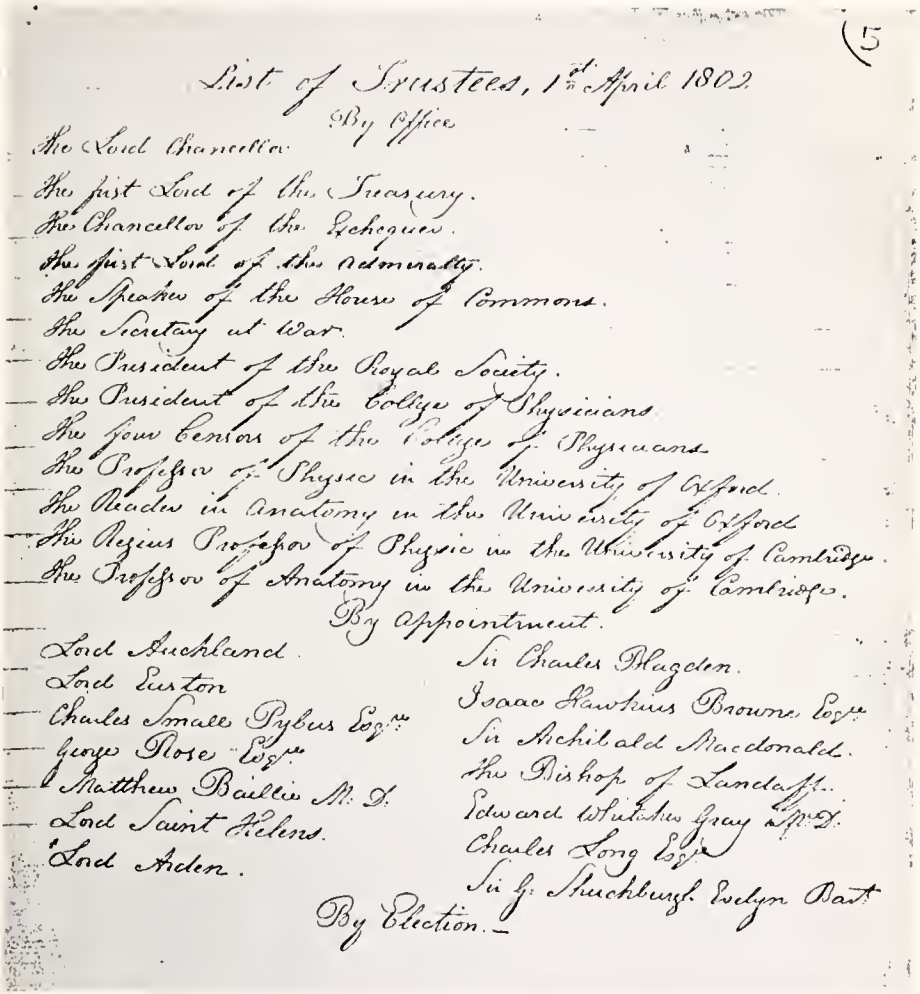
Upon the Whole, I fear we must give up the Idea of a Croonian Lecture, but if you think it not too late to make any further attempt for one, you will be so good as to let me know.

I am very truly your most obed. Serv.
B. W. Green

British Museum
Sept. 3, 1792.

PLATE 4

E. W. Gray. Elected as Trustee to the Hunterian Collection. Records, **1** . 4 (at the Royal College of Surgeons, London).



(5)

List of Trustees, 1st April 1802.

By Office

The Lord Chancellor
The first Lord of the Treasury.
The Chancellor of the Exchequer.
The first Lord of the Admiralty.
The Speaker of the House of Commons.
The Secretary at War.
The President of the Royal Society.
The President of the College of Physicians
The four Censors of the College of Physicians
The Professor of Physic in the University of Oxford.
The Reader in Anatomy in the University of Oxford
The Regius Professor of Physic in the University of Cambridge.
The Professor of Anatomy in the University of Cambridge.

By Appointment.

Lord Auckland.
Lord Euston
Charles Small Pybus Esqr.
George Rose Esqr.
Matthew Baillie M. D.
Lord Saint Helens.
Lord Arden.
Sir Charles Blagden.
Isaac Hawkins Browne Esqr.
Sir Archibald Macdonald.
The Bishop of Landaff.
Edward Whitaker Gray LLD.
Charles Long Esqr.
Sir G. Shuckburgh Evelyn Bart.

By Election.

PLATE 5

John Edward Gray on E. W. Gray. *Miscellaneous Papers*, 1862–74, folio 53. British Museum (Natural History).

Edward Whitaker Gray M.D.
The Eldest Son of Samuel Gray of Tillmal was
born the 21 of March 1748. he was educated
in London studying medicine under Dr William
Hunter. He went to Paris medicine and
Sports and on his return Where country
with a collection of Natural History, of
that country, which he procured by the Inducement
he was appointed chiefly by the interest
of that Dr William Hunter as an assistant
Librarian having charge of the Natural
History Collection in the British Museum
in 1778. On the 11 of Feb 1779 he was elected
Fellow of the Royal Society, in 1787. he
was promoted Sekeeper of the Natural History collection
and Secretary to the British Museum
and on the 30 of Nov. 1797 was Elected

Fabricius letters.

Taylor Records 4.306 Morant K & Knightsbridge Daughter

see Smith Fabricius Brayley Mus London 80–122

Keeper of the Records of State appointed before him

Resigned

Sr. Secretary & the Royal Societies
he resigned these three offices under
her death on the 27 of December 1806
he was succeeded as Secretary of the
Royal Society by Sir Humphrey Davy
the publish two papers in the Transactions
entitled.

add.

He married in Sports
Miss Beardsley (or Bensley) and had four children a son
who died before him & two daughters the one of the daughters
after latter married, Mr Taylor Comte the
first. Keeper of the Antiquarian department
in the British Museum and for some years
Secretary of the Royal Society Brother from M. to a
Brother died in

Battle of the Nile in 1798, was the capture from the French at Alexandria of the Egyptian antiquities (including the Rosetta Stone) which reached England in 1802/3 and were stored in sheds in the garden of Montagu House. The second was the purchase in 1804 of the Townley Collection, the finest collection in England at the time of classical sculpture, coins, medals and miscellaneous antiquities, for which there was, likewise, no room in the Museum. By great good fortune both collections came into the Museum's possession shortly after a new Principal Librarian had been appointed, in the person of Joseph Planta (1744–1827).

All this, though incidental to Gray's activities in the Museum, was to throw further light on the condition of the natural history collections under his charge. With the Trustees petitioning Parliament for funds for the purchase of the Townley Collection, as well as for a new building for it and for the Egyptian antiquities, it devolved upon the Principal Librarian to take stock of conditions within Montagu House as a whole, and to question their adequacy to a growing public demand. The question of a new building was resolved in a report by a House of Commons Committee of 19 June 1805[23] which was accepted by the Trustees, and a new Townley Gallery was erected at the north-west corner of Montagu House, to be opened on 3 June 1808. The internal affairs of the Museum, on the other hand, were investigated by a number of committees, the first dealing with the conditions of the departments under the cloak of

> . . . Manuals for the Attendants and what is wanted to be done in each department of the Museum . . . .[24]

The paragraphs concerning the Department of Natural and Artificial Products revealed deficiencies which a Solander would not have allowed to pass, and it may be significant that the reports Gray was required to submit were to be countersigned by Joseph Planta himself :

1. That inscriptions be placed in the different rooms according to the list specified by Dr Gray (Appendix F) [not now available].
2. That Mr Planta and Dr Gray report on the General Catalogue or Inventory which may best serve the purposes of the Annual Visitation.
3. That measures be immediately taken for more effectively excluding the dust from those parts of the Collection under Dr Gray's care, and that the progress made therein be reported at the next General Meeting.

Gray's reply, dated December 1805, to what were in fact criticisms of his stewardship, was unquestionably evasive, and being in no position to make it otherwise, he tendered his resignation of the office of Secretary before the Trustees met in early 1806.[25] Although he retained the Keepership for another year until his death,[26] his name disappears from the Minutes ; and death did not spare his reputation.

[23] BM. Trustees Minutes, 1805, GM.981.
The Trustees Minutes of 3 July 1805 title this report wrongly, and it is therefore misleading. It will be found under House of Commons Reports Committees, 1805, III, pp. 347–355, 19 June 1805, and was received by the Trustees on 3 July 1805.
[24] BM. Trustees Minutes, 1805, GM.978–981.
[25] BM. Trustees Minutes 1806, GM.985.
[26] BM. Trustees Minutes 1805, C.2267.

During 1806 a Sub-committee of the Trustees had been considering the Establishment and Duties of the Officers, its report being finally approved at an Extraordinary General Meeting of 28 February 1807.[27] The most important of its conclusions, as far as they related to natural history, was that antiquities should no longer be subordinate in a Department of Natural and Artificial Products. Indeed, in 1803 an Assistant Librarian had already been placed in charge of antiquities in the person of Taylor Combe (1774–1826)[28] and the formal separation was made on the occasion of Gray's death, leaving George Shaw as Keeper of the Natural History Collections.

More relevant to the near twenty years of Gray's Keepership are the following paragraphs in the Sub-committee's report :

Departments of the Museum[29]

4. In the Department of Natural History all the Catalogues are represented to be so defective, that the under-Librarian here will have a choice of labour in which he must be directed (under the sanction of the Trustees and of the Principal Librarian) by the joint consideration of his own peculiar qualifications, and the urgency of the particular work.

List of Works to be executed either in the discharge of the ordinary Duties of the House, or as Extra Services[30]

3. Natural History
   1. General Inventory of the Contents of the Department for purposes of the Annual Visitation.
   2. New Catalogue of Sir Hans Sloane Collection, the original catalogue of 20 volumes is very inaccurate.
   3. Catalogue of Insects, Zoophytes, Lithophytes . . . it is doubtful if some parts of the collection deserve a catalogue.
   4. To arrange the general mass of the Botanical Collection postponed by previous Officers.
   5. To compile a Classed Catalogue of all the printed Books in the Museum belonging to subjects of Natural History according to the plan of Sir Joseph Banks but in a more compressed form.

The change of temper under Joseph Planta's librarianship becomes clear from the duty imposed on officers in carrying out these directions. Thus every Under Librarian and Assistant Librarian was obliged, in his first year, to devote the whole of his extra time (namely, three mornings in each week) without extra allowance, to the service of the Museum. For the public, one of the first tangible results of this was the issue, in 1808, of the *Synopsis of the Contents of the British Museum*, to run through sixty-three editions, the last in 1856.[31]

[27] BM. Trustees Minutes 1807, GM.1007 *et seq.*
[28] *Dict. natn. biogr.*, 1887, **11** : 429 (Combe, Taylor, written by W. Worth). In 1808 Taylor Combe married Gray's second daughter, Elizabeth.
[29] BM. Trustees Minutes, 1807, GM.1011.
[30] BM. Trustees Minutes, 1807, GM.1013.
[31] BM. Trustees Minutes, 1807, GM.1031, 1038. See also Anon., 1808 *et seq.*

ROYAL SOCIETY AND LATER YEARS

Throughout the years of his attachment to the British Museum Gray was active in the affairs of the Royal Society, and his participation, both as a Fellow and later as Secretary, gives a further insight into the place he took among his contemporaries. His election is dated 11 February 1779, about a year after his return from Portugal. In his application, Gray had simply described himself as 'Botanist', since an M.D., unless supported by some noteworthy advance in surgery or medicine, was insufficient grounds for election. It is difficult in an age of patronage to appraise the calibre of men who held positions, since many were elected to the Society through the influence of their friends. Gray, for example, had the support of eleven Fellows, among them Sir Joseph Banks, Daniel Solander, Charles Morton, later Principal Librarian, and Sir William Watson, one of the Trustees.[32]

Coming from a family long connected with commercial botany, and being himself interested in plants, Gray would naturally lean on the subject to justify an application. Yet Gray's formal contact with botany is conspicuous, if not by its absence, by such meagre reference in the literature as that in Vol. XXIII of Sowerby's *English Botany*, where its author, J. E. Smith,

> . . . begs leave to mention that my worthy friend Dr Gray of the British Museum has very properly reminded me of his having, many years ago, shown me specimens of *S. murale*, which at page 1090 of this work, is mentioned as a more recent discovery. *Irio sisymbrium* – [London rocket.]

Another isolated record of Gray's field activities in botany comes from his having, in 1777, sent Sir Joseph Banks a collection of plants from Portugal. However, with Solander in charge at Montagu House and working on Banks' collections in Soho Square, the latter would hardly have cause to recommend another botanist to the Museum.

To be an Assistant Librarian at the British Museum was a sufficient qualification for election to the Linnean Society in 1788 for one of its first associates, no botanical interest or achievements being called for. It is significant, however, that throughout all the years of his fellowship, Gray contributed nothing to the Society's proceedings.[33] It was left to the author in the *Dictionary of National Biography*, writing some eighty years after Gray's death, to record that he was '. . . stated to have been eminent as a botanist', and Munk accords him the distinction of '. . . well known philospher and naturalist' (Munk, 1878 : 298).

Gray's first contributions to the Royal Society, six years after his election, were the Croonian Lectures[34] of 1785 and 1786, which, by the testator's will, were on

[32] Gray's Certificate of Election shows him to have been supported by :
* Banks, Sir Joseph (1743–1820), President of the Royal Society from 1778 ; Harper, Samuel ; * Wilson, Benjamin (1721–1788), painter and man of science ; * Watson, Sir William (1715–1787), M.D., Trustee of the B.M. ; * Solander, Daniel Charles (1736–1782), M.D. ; * Duane, Matthew (1707–1785), F.S.A., coin collector ; Majendie, John James, later D.D. ; Lloyd, John ; Shadwell, Lancelot ; Greville, Charles Francis (1749–1809), botanist, mineralogist ; * Morton Charles (1716–1799), Principal Librarian.

* Thus, six were eminent enough to qualify for the *Dictionary of National Biography* and Charles Greville, whose garden and conservatory at Paddington Green would have been well known to the Gray family, is recorded in *Bretschneider* and in *Rees' Cyclopaedia*, xvii, under *Grevillea*.

[33] Linnean Society, 1789, *List of Linnean Society*, 1788–1851.

[34] *Dict. natn. biogr.*, 1888, **13** : 207 (Croone, William, written by Thompson Cooper).

muscular response (Gray, E. W., 1785, 1786). He was ten years a Fellow of the Society before his first paper appeared in the *Philosophical Transactions* (Gray, E. W., 1788), and this, strange as it may seem, was on 'electric fluid', and the manner in which glass is charged and discharged. It was a paper of four pages, an unusual subject for a naturalist to turn to, and may be described as a philosophical reflection unsupported, it seems, by practical experiments; it could well have been the product of a visit to a laboratory of one of his friends known for his interest in natural philosophy. The next year there appeared, also in the *Philosophical Transactions*, Gray's only known published contribution to natural history; it was an *Observations on the Class of Animals called by Linnaeus, Amphibia; particularly on the Means of distinguishing those Serpents which are venomous, and those which are not so* (Gray, E. W., 1789). Gray was critical of the work Linnaeus had done, supposedly in a hurry, and sought to reverse Linnaeus' conclusion that venomous serpents could not be separated, by proposing, on the basis of external physical characters, that they could be, and should be made generically distinct. Then, in 1795, Gray was requested by the President to collect facts about a considerable earthquake occurring on the night of 18 November of that year, in an area bounded by Bristol, Liverpool, Leeds and Norwich, and to determine its cause (Gray, E. W., 1796). In balancing the evidence, terrestrial and aerial, Gray in a well-reasoned paper, 'felt disposed to believe their cause is situated in the earth', the atmospheric causes being accidental or secondary. Each of these papers gives an uncomplicated, straightforward account of the factors involved, and analyses the problems in a way a reader can accept. At least they associate their author with the names of the eminent men which appear in the *Transactions* in these years; Banks, Cavendish, Erasmus Darwin, William Herschel, Everard Home, John Hunter, Nevil Maskelyne, Priestley and James Edward Smith.

In 1797, at the age of 49, Gray was elected the Royal Society's Senior Secretary, and it is interesting to examine the circumstances which brought him into so prominent a position. In 1782, three years after his election as Fellow, there occurred one of those rows that, from time to time, tend to rend a society, particularly when a strong personality, such as Sir Joseph Banks its President, finds his authority ignored by its officers.[35] Although Gray was in no way involved in the dispute, its consequences led to his preferment. After Sir Joseph Banks had been President for two years, the foreign secretary, Dr Charles Hutton (1737–1823), Professor of Mathematics at Woolwich Academy and living at Woolwich, was charged with usurping the President's functions and neglecting his duties. Banks secured Hutton's removal by persuading the Council to make the rule that the Society's secretaries must reside in London. Sir Joseph's action threatened the Society with a schism, and in the ensuing controversy the Senior Secretary, the Rev. Paul Henry Maty, showing himself as contrary in the affairs of the Society as he had in the affairs of the Church, resigned the secretaryship on the grounds of Sir Joseph's 'despotism'. Peace was eventually restored by the appointment as Secretary of Banks' friend, Sir Charles Blagden (1748–1820), whose scientific

[35] *Dict. natn. biogr.*, 1885, **3**: 129 (Banks, Sir Joseph, written by B. D. Jackson).

reputation and personal quality restored confidence. In 1797, after thirteen years in office, Blagden retired and it is a tribute to Gray's relations both with the Fellows and with an increasingly authoritarian President, that on 30 November of that year he was elected as Senior Secretary.[36] One may conclude, therefore, that if judged by the nature of his contributions to the Society's Proceedings Gray owed it to his personal qualities rather than to any intellectual distinction that he found himself, twenty years after his arrival in London, as Senior Secretary of the Royal Society, a position that he held until his death, when he was succeeded by Sir Humphry Davy (Anon., 1940).

Ever since Gray's appointment as Keeper at the British Museum he had, as was customary, occupied apartments within Montagu House and he kept these until his death. It is probable that his wife lived in the family home at Blackheath where his son, Francis Edward Gray (1784–1814),[37] was born, brought up and lived after his marriage. By 1800, Gray appears to have overcome his objections to the marriage of his nephew Samuel Frederick, and as he may often have been alone in the Museum's apartments, he encouraged Samuel to bring his young family back to London and to settle in Devonshire Street, Queen's Square (now Burton Street, W.C.1), ten minutes' walk from the Museum (Gunther, 1975 : 61). The old man took an unexpected liking to Samuel's wife, Elizabeth Forfeit, being grieved unless he saw her every day (Gray, J. E., *c.* 1862 : f. 5), itself a sign that he was ageing ; a fact the Trustees Minutes confirm in the loss of health.[38]

About this time, Gray sat for his portrait, as a gentleman of his position and estate should rightly do, choosing a promising young society painter, August Wall Callcott (1779–1844), a pupil of John Hoppner's (1758–1810). The portrait, (Plate 1) is in the Reynolds genre, the fashion of the time, and it suggests a sitter younger than Gray can have been (he was in fact over fifty). The features, with the high forehead characteristic of the Gray family, convey the distinction of a grand seigneur, but they also betray a want of sympathy, even of assertiveness, and are certainly without the severe intellectualism of his nephew, Samuel Frederick, or the human spontaneity of his great-nephew, John Edward, so evident in his active, middle years.

The last honour to come to the old gentleman – if fifty-five, even in those days can be called old – was election as one of the Trustees to the museum founded for the collection of John Hunter who had died in 1793. After ten years of government indecision, the collection was eventually purchased in 1799 and delivered over to the Court of Assistants of the Surgeons Company under certain terms and conditions which included the appointment of Trustees by Office and Election (Anon., 1803). It was as one of the fourteen eminent men elected as 'Trustees by Original Appointment' that Gray found himself associated with the prominent in the land, from the Lord Chancellor and the Speaker downwards, although it is recorded that he

[36] The only letters exchanged between Banks, as President of the Royal Society and Gray as Secretary, to be preserved are two of 3 and 21 September 1802 which discuss whether the Croonian Lecturer need be a Fellow of the Society (see BM. MS. 3).

[37] Francis Edward Gray, m. Maria Emma Smith, who, twelve years after her husband's death, married John Edward Gray.

[38] BM. Trustees Minutes, 1804, C.2247.

attended one meeting only before his death (Negus, 1966 : 8). Gray was further honoured by the Board of Trustees, who recommended presenting him with a cast of the bust of John Hunter, copies being received also by Sir Joseph Banks, Sir Charles Blagden, George Shaw and Joseph Planta (Anon., 1822).

Gray died in the Keeper's Apartments at the British Museum on 28 December 1806, and according to the family Bible was 'buried behind the Foundling opposite to Askew's grave'.[39] Gray's burial is recorded in the burial register of St George Church, Bloomsbury Way (sometime called Hart Street) :

1807, January 3rd, Edward Whitaker Gray, M.D., British Museum.[40]

His name also appears in the burial fees book, with one item paid to the gravedigger (P82/Geo. 1/69). There is, however, no link between this record and the location of the burial ground unless that in the family Bible is accepted. If it is, and being repeated for two others of the family, there is little doubt of its correctness, then Gray would have been buried in the so-called, 'Burial Ground of St George, Bloomsbury', a narrow east–west strip which lay north of a parallel strip being the 'Burial Ground of St George the Martyr'. Both these strips of land were situated 'behind the Foundling' (namely, north of the Foundling Hospital of 1739–1926) which were, in 1884, combined into the St George Gardens of the present Camden Council.

The family Bible is, however, in error about Askew's grave, that is, if it refers to Dr Anthony Askew, M.D., F.R.S. (1722–1774), eminent as a Greek scholar and 'friend of all learning' who lived in Queen Square, Bloomsbury. Askew died at Hampstead, the family home, and according to the Burial Register of St John's Church, Hampstead, was buried there on 6 March 1774, as correctly recorded by Munk (1878 : 188). It might well be that those who saw much of Gray's life spent in the shadow of great men thought to associate him in death with the eminent President of Royal College of Physicians, who had authorized his first employment in 1773.

Time has largely worn away the inscriptions on the tombstones that graced the 'Burial Ground of St George, Bloomsbury', and such as remain have been placed against the periphery walls, Gray's probably amongst them (Gordon & Deeson, 1950 : 116). In 1793 Gray's fourth child, William Herman (ob. inf.), was laid to rest 'behind the Foundling' where his father was to follow him, and in 1826, Taylor Combe (1774–1826), Gray's son-in-law, joined them.

In spite of the positions he held, and the attributions a later generation bestowed upon him, Edward Whitaker Gray may be seen rather as a man of general capability, acceptable to those to whom he owed his advancement rather than as one of the more prominent men of his day. In spite of the opportunities that came his way, it seems that the creative intellect, which made its appearance in the Gray family over many generations, passed him by. Possibly an up-bringing as a late arrival and the absence of any need to earn a living removed incentive from his character. But if the course of his life lacked the element of concentration (he did not stay in medicine

[39] Gray Family Bible of 1821, in possession of Samuel Walter Gray (1941–).

[40] Greater London Record Office, The County Hall, Head Archivist, London S.E.1. P.82/Geo. 1/57 and 1/69.

longer than he wanted), and he evidently saw in natural history an occupation suited to a gentleman of his inclinations, the fact remains that he devoted his life and means to the cause of science and, whether as medical man, museum curator or as secretary of a scientific society, he lent his presence to a background of considerable events. He lived and worked on the fringe of the activities of some of the great scientists of the period, but he lacked the capacity to contribute to the progress they themselves inspired.

INFLUENCE ON J. E. GRAY

In considering the life of Edward Whitaker Gray one turns, inevitably, to the greater achievement of his great-nephew, John Edward Gray. One could even go further and say that the interest in the uncle stems from the greater interest in the nephew (as well, incidentally, as in his father, Samuel Frederick Gray). Unless this were the case the record of Edward Whitaker Gray's life might have remained buried in the volumes of the Minutes of the Trustees of the British Museum, since Gray's impress on the scientific mind of his day is suggested in the brief, three-line note of his death in the *Gentleman's Magazine* (Anon., 1807). In concluding an account of Gray's life, therefore, it is relevant to assess the nature of his influence on his great-nephew, and to enquire what the latter really knew about his uncle's career.

Most of John Edward Gray's impressions must have come from his father, but there were others in the Museum who will have remembered his uncle, like John Abernethy of St Bartholomew's, and there may have been personal and family documents that have since been lost. However, it is certain that he would not have had the broad and accurate knowledge of his uncle's contemporaries such as we have (there is evidence of that in his *Autobiography*). It is doubtful if he had access to official sources such as those of the Minutes of the Trustees of the British Museum or those of the Royal Society. Nor were the encyclopaedias of the period, good as they were, any match for the *Dictionary of National Biography*, which provides a remarkable perspective to history. Nevertheless, it is rather surprising, when one considers the importance John Edward himself attached to publishing scientific work, that he did not remark, in his habitual references to his uncle in the *Autobiography*, on the meagreness of the latter's contributions to natural history, and the lack of a catalogue of the collections of which he had charge. Neither did he ever suggest that his uncle had not a tithe of his own father's learning, originality, scholarship or perception.

It is more likely that his uncle's influence grew out of what he was told as a child, rather than from the recollection at the age of four of a visit to Montagu House and the stuffed crocodile across the back staircase (Gray, J. E., *c.* 1862 : f. 6). His parents presumably kept telling him, as parents do, that unless he worked hard he would never, like his uncle, become a great man, and certainly not Keeper of the natural history collections.

> It was my day-dream when a lad that I should like to be like my great uncle the keeper of the Natural History department in the British Museum, most

> improbable considering the circumstances of my father and myself caused by his continued ill-health. (Gray, J. E., *c.* 1862–74 : f. 19)

The personal relations between John Edward Gray's father and uncle must also have had a bearing on John's opinion, but there is nothing to suggest that the ill-feeling about the father's marriage carried through into the uncle's later years. The return of the Gray family to London in 1800 to settle near the British Museum may have been due to the uncle's charity, but there is nothing to suggest that it improved the family situation during the Chelsea years after 1806. If Samuel Frederick knew more about his uncle than the aura surrounding an official in the British Museum and a secretary of the Royal Society, any talk of 'success', in terms of scientific accomplishment, would have had a hollow ring in the ears of a man of his intellect and discernment. Not only had Samuel Frederick suffered loss of patrimony under his grandfather's will (Gunther, 1975 : 31), but by worldly standards he exhibited all the ingredients of failure, as an intellectual of his temperament would have been the first to admit, and his son to realize.

In his writing there is nothing to suggest that John Edward Gray inherited any ill-feeling towards his great-uncle ; on the contrary, he had reason to be grateful for a happy accident that provided him with a wife. Edward Whitaker's son, Francis Edward Gray, died prematurely in 1814, leaving a widow and two daughters. John Edward Gray married the widow, Maria Emma, twelve years later, and thereby acquired not only happiness but the means to live his life fully. It put travel within his reach, and his first visit to Europe in 1826 was to Paris to study at the feet of the Baron Cuvier, whom he had conducted round London as a student of 18, and who he revered as colouring his whole approach to zoology. Although free with his criticism of Cuvier's work, it was from Cuvier that Gray derived the inspiration of his universal concept in his *Systema naturae*. To follow in the steps of the master was an ideal to provide the driving force for an extraordinary range of published work, to include 200 catalogues and 1000 separate papers in fifty years' service in the British Museum.

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The preparation of this paper has depended on access to the records of the British Museum, the British Museum (Natural History), the Royal Society, the Royal Colleges of Physicians and Surgeons and of the Linnean Society ; the author also wishes to place on record the very considerable assistance given by Dr P. J. P. Whitehead in the revision of the manuscript.

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LONDON : 1977

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WALTER GERALD TREMEWAN

Pp. 211–232

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THE PUBLICATIONS ON LEPIDOPTERA BY O. G. AND A. COSTA AND THE NOMINAL TAXA DESCRIBED THEREIN

By W. G. TREMEWAN

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SYNOPSIS

The *Lepidotteri* volume of *Fauna del Regno di Napoli*, written by O. G. Costa, is described and collated ; the citation of page numbers and dates attributed to the various portions follows the Ruling and Appendix 5 in Direction 59 of the International Commission on Zoological Nomenclature. The aim of the bibliography is to include all papers on Lepidoptera by O. G. and A. Costa. The nominal taxa described by them are catalogued together with their original references and the dates of publication. The current status of each nominal taxon and, where possible, a reference to the authority responsible are given ; 12 new combinations and 4 new synonymies are established.

INTRODUCTION

Oronzio Gabriele Costa was born in Alessano on 26 August 1787 and died on 7 November 1867. During his life he wrote 21 papers which deal at least in part with Lepidoptera. His son Achille Costa, who was born on 10 August 1823 in Lecce and died on 17 November 1898, wrote 37 papers dealing with Lepidoptera. The Costas are perhaps best known for their monumental work *Fauna del Regno di Napoli*, 1829–1886. Each volume is made up of parts, each part having independent pagination ; to add to the difficulties of referring to this work, many parts were published at different times. The catalogue in this paper contains the names of the lepidopterous taxa described by O. G. Costa in the *Lepidotteri* volume of the *Fauna del Regno di Napoli* ; the citation of page numbers and the dates attributed to the various portions of the *Lepidotteri* volume follow Direction 59 of the International Commission on Zoological Nomenclature. The catalogue also includes the names of lepidopterous taxa described elsewhere by O. G. Costa, and those of A. Costa. It has not been possible to examine six of the papers by O. G. Costa (see Bibliography).

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FAUNA DEL REGNO DI NAPOLI

The work *Faun dela Regno di Napoli*, 1829–1886, begun by Oronzio Gabriele Costa in 1829 and continued after his death by his son Achille Costa, was issued in fascicules of varying amounts of text accompanied by coloured plates. Sherborn (1910) published a note in which he stated that he had a manuscript of the dates of publication of the various parts; many of these dates he obtained by pulling to pieces three copies of the work, when they could be observed on or near the back fold of a sheet, half-sheet, or single leaf. He subsequently published the full collation of the work (Sherborn, 1937), together with the dates of publication as far as he had been able to ascertain. A further collation was published by D'Erasmo (1950).

The *Lepidotteri* (Lepidoptera) volume of *Fauna del Regno di Napoli*, written by Oronzio Gabriele Costa, consists of 446 pages, of which 12 are paginated in Roman and 434 in Arabic numerals. The work is accompanied by 38 coloured plates. The pages bearing Arabic numerals are divided into 47 separately paginated sections which, with the exception of two, begin with a page bearing the number '1'. In four cases the pages so numbered are left-hand pages and are printed on the back of the last page of the preceding separately paginated section. Because of this curious method of pagination, great difficulty has resulted in citing the references to new taxa described therein. Consequently, Hemming devised for his own purposes a system of continuous pagination which was eventually submitted for consideration to the International Commission on Zoological Nomenclature. The proposals were accepted and ruled upon in Direction 59 (International Commission on Zoological Nomenclature, 1957b) and the collation of the volume together with the page numbers proposed were published in Appendix 5. The Ruling and Appendix 5 of Direction 59 are reproduced below.

Direction 59

Ruling. The ruling under Direction 59 reads as follows.

(1) (a) the forty-eight portions of the *Lepidotteri* volume by Oronzio Gabriele Costa of the work entitled *Fauna del Regno di Napoli*, each of which is separately paged with Arabic pagination, are to be cited as though this volume had been published with continuous Arabic pagination, the page numbers so to be allotted, which are to be cited in square

brackets ([. . .]), to be those specified in the Appendix (there styled Appendix 5) to the application reproduced in the first paragraph of the present *Direction* ;
(b) the under-mentioned dates are to be assigned to the several portions in which the volume specified in (a) above was published :—

Pages numbered as prescribed in (a) *above*	*Date to be assigned to pages cited in Col.* (1) (*Note :—Dates cited in round brackets (parentheses) are printed on the bend of each of the sheets concerned; dates cited in square brackets have been determined by reference to external evidence.*)
(1)	(2)
[1]—[314]	[1836]
[315]—[370]	(1848)
[371]—[402]	(1849)
[403]—[418]	(1850)
[419]—[442]*	(1849)

(2) The title of the work specified in (1) above is hereby placed on the *Official List of Works Approved as Available for Zoological Nomenclature* with the Title No. 27, the entry so made to include an endorsement regarding (a) the system of pagination to be used in citing the pages of which the foregoing volume is composed and (b) the dates to be assigned to the several portions of that volume as prescribed in (1) above.

Appendix 5. The collation of and proposed pagination for the *Lepidotteri* volume of O. G. Costa reads as follows.

System of pagination devised for the purpose of making references to the "Lepidotteri" volume of the "Fauna del Regno di Napoli" or Oronzio Gabriele Costa

Page numbers in Costa's "Lepidotteri" (1)	*Identification of the first page of the separately paged section cited in Col.* (1) (2)	*Page numbers allotted to the separately paged section cited in Col.* (1) (3)
[1]–2–5	"Ordine X. Lepidotteri"	[1]–[5]
1–2–[3]–4–[1 blank]	"Famiglia prima. Lepidotteri Diurni o Parpaglioni" (*Note:* The first page of this Section starts on a left-hand page.)	[6]–[10]
1–4	"Genere Papilione, *Papilio*, Lin."	[11]–[14]
1–11–[1 blank]	[The description of "P. Giasone, *P. nymphalis Jasius*" starts on this page.]	[15]–[26]
1–2	[The description of "T. Issipile, *Th. hypsipyle*" starts on this page.]	[27]–[28]
1–30	[The description of "P. del Cratego ; *Pap. Crategi* [sic]" starts on this page.]	[29]–[58]
1–[1 blank]	"Libythea"	[59]–[60]

* This pagination to be amended, see p. 219.

System of pagination (*cont.*)

Page numbers in Costa's "Lepidotteri" (1)	*Identification of the first page of the separately paged section cited in Col.* (1) (2)	*Page numbers allotted to the separately paged section cited in Col.* (1) (3)
1–2	"Limenitis"	[61]–[62]
1–23–[1 blank]	"Satyrus"	[63]–[86]
1–4	"Hesperias [sic]"	[87]–[90]
1–2	"Famiglia seconda. Lepidotteri Crepuscolari o le Sfingi di Lin."	[91]–[92]
1–22	"Genere Sfinge ; *Sphinx*"	[93]–[114]
1–2	"Genere Progride, Procris, Fab. Latr."	[115]–[116]
1–34	"Famiglia terza. Lepidotteri Notturni o le Falene di Lin."	[117]–[150]
1–24	"Notturni. Quinta Sezione, Nottuini"	[151]–[174]
1–2	"Genere Piralide, *Pyralis* (1), Fabr."	[175]–[176]
1–2	"Sotto-genere Erminea ; *Herminia*, Latr."	[177]–[178]
1–2	"Sotto-genere Ipena ; *Hypena* (1), Schran."	[179]–[180]
1–4	"Sotto-genere Piralide ; *Pyralis* (1), Schran."	[181]–[184]
1–4	"Di una Piralide originaria del Brasile"	[185]–[188]
1–2	"Sotto-genere Scopola ; *Scopula* (1), Schrank"	[189]–[190]
1–5	"Sotto-genere Bote ; *Botys* Latr."	[191]–[195]
1–2	"Sotto-genere Asopia ; *Asopia* (1), Trtsk." [*Note:* Page 1 of this Section is a left-hand page and is printed on the back of page 5 of the preceding Section.]	[196]–[197]
1–2	"Sotto-genere Piransta ; *Pyrausta* (1), Schrk." [*Note:* Page 1 of this Section is a left-hand page and is printed on the back of page 2 of the preceding Section.]	[198]–[199]
1	"Sotto-genere Ercina ; *Hercyna* (1), Trtsh." [*Note:* The single page of which this Section is composed is printed on the back of page 2 of the preceding Section and is thus a left-hand page.]	[200]
1–6	"Sotto-genere Ninfola, *Nymphula* (1) Scrank [sic]" [*Note:* This Section starts on a right-hand page, for, although the preceding Section started on a left-	[201]–[206]

System of pagination (*cont.*)

Page numbers in Costa's "Lepidotteri" (1)	*Identification of the first page of the separately paged section cited in Col.* (1) (2)	*Page numbers allotted to the separately paged section cited in Col.* (1) (3)
	hand page, it consisted, as noted above, of only a single page, the verso of the last page of the preceding Section.]	
1–2	"Sotto-genere Ennichia ; *Ennychia* (1), Trtsk."	[207]–[208]
1–4	"*Galleria* (1) Fabr."	[209]–[212]
1–24	"Genere Tignuola, *Tinea* Latr."	[213]–[236]
1–8	"Sotto-genere Chillo ; *Chilo* (1)"	[237]–[244]
1–4	"Sotto-genere Fico ; *Phycis* (1), Fabr."	[245]–[248]
1–4	"Sotto-genere Lispe ; *Lispe* (1)"	[249]–[252]
1–8	"Sotto-genere Iponomenta ; *Yponomeuta* (1) Latr."	[253]–[260]
1–4	"Sotto-genere Plutella ; *Plutella* (1)"	[261]–[264]
1–	'Sotto-genere Arpiale ; *Harpiterix* (1)"	[265]–[266]
[1 blank]		
1–2	"Genere Palpola ; *Palpula* (1) Trtsk."	[267]–[268]
1–4	'Sotto-genere Lampro ; *Lampros* (1)"	[269]–[272]
1–2	"Genere Adela ; *Adela* (1), Latr."	[273]–[274]
1–16	"Genere Ecofora, *Oecophora* (1), Latr."	[275]–[290]
1–4	"Genere Elachista ; *Elachista* (1)"	[291]–[294]
1–8	"Sotto-genere Ornice, *Ornix* (1)"	[295]–[302]
1–4	"Genere Teroforo ; *Pterophorus* (1), Geoff."	[303]–[306]
[1]–4	"Indice de'Lepidotteri del Regno di Napoli"	[307]–[310]
1–4	"Spiegazione delle Tavole che accompagnano questa prima parte di Lepidotteri"	[311]–[314]
1–104	"Geometrae"	[315]–[418]
1–8	"Bombicoidi" (*Acronycta*, etc.)	[419]–[426]
1–8	"Cocliopodi"	[427]–[434]
*1–8	"Limacodes"	[435]–[442]

The total number of known plates accompanying the *Lepidotteri* volume is 38. These were issued in six series of which the first four commenced with the Roman numeral 'I'. The two remaining series are incomplete and consist of pl. IV, and pls XV, XVI. To avoid confusion the references to these plates cited in the catalogue of taxa (pp. 220–228) follow the recommendations in paragraph 4 of Appendix 5. These recommendations and the description of the plates given in Appendix 5 read as follows.

* This section to be deleted, see p. 219.

(1) Tav. I–VII — The species figured are all butterflies. The explanations of these plates are given on page [311] (as numbered in paragraph 3 above), where these plates are grouped under the heading "Lepidotteri Diurni". These plates can therefore be cited without risk of confusion if the words "(Lep. Diurn.)" are inserted after the word Plate (or Tavola) and before the plate number.

(2) Tav. I–XIV — These plates all illustrate moths discussed (at the appropriate points) in the section of the text, the pages of which have been allotted the page numbers [91]–[306] in paragraph 3 above. The explanations of these plates are given on pages [311] to [314] of the "Spiegazione", where they are grouped under the heading "Lepidotteri Notturni". Following the system suggested in (1) for the first series of plates, these plates may safely be cited with the numbers as published, subject to the addition of the words "(Lep. Nott.)" before the plate number.

(3) Tav. I–XIII — These plates are all related to the 104 pages of supplementary text to which the page numbers [315] to [418] have been assigned in paragraph 3 above. These plates may be cited by adding the word "(Geom.)" before the plate number.

(4) Tav. I — One plate so numbered relates to the portion of the text, the pages of which have been assigned the numbers [419] to [426] in paragraph 3 above, i.e. the text relating to the "Bombicoidi". This plate may be cited by adding the word "(Bomb.)" before the plate number.

(5) Tav. IV — One plate so numbered relates to the section of the supplementary text headed "Cocliopodi", the pages of which have been assigned the numbers [427] to [434] in paragraph 3 above. The plate may be cited by adding the word "(Cocl.)" before the plate number. There are no plates bearing the numbers I, II, or III relating to this part of the text.

*(6) Tav. XV; Tav. XVI — Two plates bearing the numbers "XV" and "XVI" refer to the portion of the text headed "Limacodes", to which the page numbers [435] to [442] have been assigned in paragraph 3 above. This plate [sic!] may be cited by adding the word "(Limac.)" before the plate numbers.

It appears that of all the copies I have examined only one is complete, viz. that in the Royal Entomological Society. During the course of this study it has become increasingly apparent that the 'final section' called 'Limacodes' (pp. [435]–[442]) does not in fact exist. This apparently mythical section seems to have originated from an error by Hagen (1862 : 143), who listed a final section entitled 'Limacodes', consisting of pp. 1–8. Hagen's collation of the 'Geometre', 'Bombicoidi' (*Acronycta*) and 'Cocliopodi' is correct but he seems to have inadvertently added an eight-page section entitled 'Limacodes'. Hagen also listed pls 15 and 16 but was careful to point out that they belong to the 'Notturni' and therefore the first part of the volume. He listed 21 plates for the first part, adding the number '23' in parentheses. The 21 plates are numbered I–VII (Diurni) and I–XIV (Notturni), so that pls XV, XVI (also Notturni) are consecutive with the latter. The 'Cocliopodi' section deals with the two common European species of Limacodidae and the genus *Limacodes* appears on p. 3 ([429]). On p. 1 ([427]) Costa made it quite clear that he was following the classification of Boisduval (1840 : 81), who placed *Limacodes* in his 'XXII. Tribus

* This section to be amended, see p. 219.

Cocliopodes, Boisd.' It therefore follows that another section entitled 'Limacodes', to follow on immediately after the 'Cocliopodi', would be nonsensical. The error of Hagen was perpetuated and strengthened by Hemming (International Commission on Zoological Nomenclature, 1957b), who firmly established a section 'Limacodes' by designating pp. [435]–[442] to the alleged 8 pages and who erroneously associated pls 15 and 16 with that section. If it is accepted that a section entitled 'Limacodes' does not exist, the *Lepidotteri* volume ends on p. [434], the last page of the Cocliopodi section. The collation and proposed pagination in the Ruling and Appendix 5 of Direction 59 must therefore be amended. The proposal that the word '(Limac.)' should precede the plate numbers when citing the two plates, XV, XVI, must be corrected so that the plates are cited with the words '(Lep. Nott.)'. The fact that D'Erasmo (1950 : 28) ended his collation of the *Lepidotteri* volume with the section entitled 'Cocliopodi' (pp. [427]–[434]) is also significant.

The research of Sherborn (1910, 1937) and Hemming (International Commission on Zoological Nomenclature, 1957b) was based on copies in the British Museum (Natural History). The present study is based on three copies in the BMNH, two copies in the British Museum, Bloomsbury, one copy in the Royal Entomological Society, London, and one copy in the Zoological Society, London.

In describing the copies that I have examined, it is assumed that the *Lepidotteri* volume ends at p. [434]. The BMNH copies, one of which is bound into two volumes, are complete except that they lack pls (Lep. Nott.) 15, 16 ; in two of them pp. [275]–[290] and pp. [291]–[294] are transposed. Neither of the two copies in the British Museum, Bloomsbury, is complete. One lacks pls (Lep. Nott.) 15, 16. The second copy, although bound in what appears to be the original hard covers, consists only of pp. [1]–[310] and their respective plates ; pp. [275]–[290] and [291]–[294] are transposed. The copy in the Royal Entomological Society is complete and has pls (Lep. Nott.) 15, 16. Pp. [275]–[290] and [291]–[294] are transposed. Pl. (Lep. Nott.) 15 depicts two Noctuids and a larva ; pl. (Lep. Nott.) 16 depicts seven micro-moths and a larva. The copy in the Zoological Society lacks the last three sections and their respective plates.

It is now only of historical interest to note that Erichson (1842 : 197), writing on Costa's work, stated that the Lepidoptera, which he dated 1832–36, were complete. It can only be assumed that he was referring to the first part of the work comprising pp. i–xii, [1]–[314] and that he merely cited the dates as printed on the title page.

CATALOGUE OF LEPIDOPTERA DESCRIBED BY O. G. AND A. COSTA

The lepidopterous taxa described by O. G. and A. Costa, regardless of their status, are catalogued below ; unavailable names are marked with an asterisk (*). When describing a number of varieties, the name of a species was sometimes attributed to the wrong author ; as I cannot decide whether this was intentional or unintentional, no corrections are made when citing the original combinations. The current status of each taxon is given with a reference, where possible, to the authority responsible. It appears that very few of the Costa names have been used, although Zeller (1847), Stainton (1869), Curò (1874–83) and Curò & Turati (1883) remarked upon them in

some detail and Hartig (1939) revised some of the taxa following an examination of the types. Any further revision should be based on the type-material; according to Horn & Kahle (1935 : 47), Achille Costa's collection is preserved in the Zoological Institute, University of Naples, and contains specimens collected and described by his father, O. G. Costa (Hartig, 1939).

The citation of the pagination, plate numbers and dates for *Fauna del Regno di Napoli* follows Ruling (1)(a), (b) and (2), and paragraphs 3 and 4 of Appendix 5 in Direction 59 (International Commission on Zoological Nomenclature, 1957b).

achillella O. G. Costa, ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [226], [312], pl. (Lep. Nott.) 2, figs 8a, 8c.

Current status : ? junior subjective synonym of *Argyresthia mendica* (Haworth, 1828) [Yponomeutidae] (Stainton, 1869 : 267).

aenalis O. G. Costa, ***Pyralis (Pyralis),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [183], [314], pl. (Lep. Nott.) 11, fig. A (right-hand) [erroneously cited in text as pl. 10, fig. 1].

Current status : junior subjective synonym of *Aglossa caprealis* (Hübner, 1800–09) [Pyralidae] (Zeller, 1847 : 563).

aerella O. G. Costa, ***Elachista (Elachista),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [293].

Current status : ? *Scythris aerella* (O. G. Costa) [Scythrididae] (Stainton, 1869 : 269).

aetnea O. G. Costa, ***Eriopus***, 1840a, *Atti Accad. gioenia Sci. nat.* **15** (1839) : 291, pl., fig.

Current status : *Callopistria aetnea* (O. G. Costa) **comb. n.** [Noctuidae].

albella O. G. Costa, ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [231], [234], [312], pl. (Lep. Nott.) 4, fig. 9A (nom. praeocc.).

Junior primary homonym of *Tinea albella* Thunberg, 1788.

Current status : ? junior subjective synonym of *Tinea pellionella* (Linnaeus, 1758) [Tineidae] (Stainton, 1869 : 267).

albidior O. G. Costa, ***Pyralis (Botys) spiralis*** Costa var., [1836], *Fauna Regno Napoli*, Lepidotteri : [192].

Current status : *Botys spiralis* (O. G. Costa) var. *albidior* (O. G. Costa) **comb. n.** [Pyralidae].

ambiquellus O. G. Costa, ***Palpula (Lampros),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [271], [313], pl. (Lep. Nott.) 7, fig. 1A.

Current status : junior subjective synonym of *Esperia sulphurella* (Fabricius, 1775) [Oecophoridae] (Stainton, 1869 : 268).

angulosella O. G. Costa, ***Oe[cophora]***, 1834a, *Specie nuove Lepid. Regno Napoli* : 4, pl. 2, figs 4a, 4c ; ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [276], [311], pl. (Lep. Nott.) 2, figs 4a, 4c.

Current status : ? junior subjective synonym of *Glyphipterix equitella* (Scopoli, 1763) [Glyphipterigidae] (Stainton, 1869 : 269).

See also : *pernicipennella* O. G. Costa, [1836].

arcuella O. G. Costa, ***Oe[cophora]***, 1834a, *Specie nuove Lepid. Regno Napoli* : 6, pl. 2, figs 6a, 6b ; ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [279], [312], pl. (Lep. Nott.) 2, figs 6a, 6b.

Current status : ? junior subjective synonym of *Argyresthia pruniella* (Clerck, 1759) [Yponomeutidae] (Stainton, 1869 : 269).

arcuellus O. G. Costa, ***Chilo,*** 1834c, *Annuar. zool., Napoli* **1834** : 75

Current status : *Chilo arcuellus* O. G. Costa [Pyralidae].

argentellus O. G. Costa, ***Tinea (Chilo),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [243] [not figured but erroneously referred to pl. (Lep. Nott.) 8, fig. 2 in text].

Current status : *Crambus argentellus* (O. G. Costa) [Pyralidae] (Zeller, 1847 : 746).

argyralis O. G. Costa, ***Pyralis (Botys),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [195].

Current status : *Botys argyralis* (O. G. Costa) [Pyralidae] (Zeller, 1847 : 567).

augustella O. G. Costa, ***Tinea,*** 1832, *Specie nuove Lepid. Regno Napoli* : 7, pl. 1, fig. 2A ; ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [218], [311], pl. (Lep. Nott.) 1, fig. 2A ; ***Elachista (Elachista),*** [293] (nom. praeocc.).

Junior primary homonym of *Tinea augustella* Hübner, 1796.

Current status : senior subjective synonym of *Phyllocnistis unipunctella* (Stephens, 1834) [Phyllocnistidae] (Mariani, 1943 : 197).

avellinella O. G. Costa, ***Oecophora,*** [1836], *Fauna Regno Napoli,* Lepidotteri : [286], [313], pl. (Lep. Nott.) 5, figs 2A, 2b.

Current status : *Borkhausenia avellinella* (O. G. Costa) [Oecophoridae] (Hartig, 1939 : 16, 19).

belzebub A. Costa, ***Satyrus,*** 1839a, *Esercit. accad. Aspir. Nat. Napoli* [**1**] : 27, pl. 2, figs 1, 2 ; 1839b, *Corrisp. zool.* **1** : 149, pl. 9, figs 1, 2.

Current status : junior subjective synonym of *Erebia pluto* (de Prunner, 1798) [Satyridae] (Higgins & Riley, 1970 : 175).

****bipunctella*** O. G. Costa, ***Ornix,*** 1834c, *Annuar. zool., Napoli* **1834** : 77 (nomen nudum).

****boisdouvaliella*** O. G. Costa, ***Tinea,*** 1834c, *Annuar. zool., Napoli* **1834** : 75 (nomen nudum).

bruzzanaria A. Costa, ***Geometra,*** 1863a, *Atti Accad. Sci. fis. mat. Napoli* **1** (2) : 19, 48, pl. 4, fig. 10 ; 1863b, *Nuovi Studii Ent. Calabria ulteriore* : 19, 48, 79, pl. 4, fig. 10.

Current status : junior subjective synonym (**syn. n.**) of *Zethes insularis* Rambur, 1833 [Noctuidae].

calabra O. G. Costa, ***Satyrus fidia*** Linnaeus var., [1836], *Fauna Regno Napoli,* Lepidotteri : [65], [311], pl. (Lep. Diurn.) 3, figs 1, 2.

Current status : *Satyrus ferula calabra* O. G. Costa [Satyridae] (Varin, 1965 : 64).

canaella O. G. Costa, ***Tinea (Plutella),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [264].

Current status : *Plutella canaella* (O. G. Costa) **comb. n.** [Yponomeutidae].

chalybaeella O. G. Costa, ***Tinea (Plutella),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [263], [313], pl. (Lep. Nott.) 5, figs 9a, 9b, 9c.

Current status : ? junior subjective synonym of *Coleophora frischella* (Linnaeus, 1758) [Coleophoridae] (Rebel, 1901 : 191).

****cirillella*** O. G. Costa, ***Tinea (Phycis),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [246] [incorrect (multiple) original spelling of *cyrillella* O. G. Costa, [1836]].

colluripennella O. G. Costa, ***Ornix,*** 1834c, *Annuar. zool., Napoli* **1834** : 77 (nomen nudum) ; ***Elachista (Ornix),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [301], [312], pl. (Lep. Nott.) 2, figs 5a, 5c [unnecessary replacement name for *Oecophora conjunctella* O. G. Costa, [1834]].

Current status : junior objective synonym of *Oecophora conjunctella* O. G. Costa, [1834] ; junior subjective synonym of *Glyphipterix simpliciella* (Stephens, 1834) [Glyphipterigidae].

colonnellus O. G. Costa, ***Tinea (Chilo),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [243], [313], pl. (Lep. Nott.) 8, figs 2, 2B [erroneously cited in text as 3].

Current status : junior subjective synonym of *Etiella zinckenella* (Treitschke, 1832) [Pyralidae] (Whalley, 1973 : 15).

columbaepennella A. Costa, ***Ornix,*** 1839a, *Esercit. accad. Aspir. Nat. Napoli* [**1**] : 28, pl. 2, fig. 3A ; 1839b, *Corrisp. zool.* **1** : 150, pl. 9, fig. 3A.

Current status : *Caloptilia columbaepennella* (A. Costa) **comb. n.** [Gracillariidae].

conjunctella O. G. Costa, ***Oe[cophora],*** 1834a, *Specie nuove Lepid. Regno Napoli* : 5, pl. 2, figs 5a, 5c ; ***Oecophora,*** [1836], *Fauna Regno Napoli,* Lepidotteri : [277] ; ***Elachista (Elachista),*** [293] ; [312], pl. (Lep. Nott.) 2, figs 5a, 5c.

Current status : junior subjective synonym of *Glyphipterix simpliciella* (Stephens, 1834) [Glyphipterigidae] (Hartig, 1939 : 13, 19).

See also : *colluripennella* O. G. Costa, [1836].

cyrillella O. G. Costa, ***Tinea (Phycis),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [246] [as *cirillella,* incorrect (multiple) original spelling] ; [313], [314], pl. (Lep. Nott.) 5, fig. 4A.

Current status : junior subjective synonym of *Euchromius ocellea* (Haworth, 1811) [Pyralidae] (Bleszyński, 1965 : 84).

See also : *cirillella* O. G. Costa, [1836] ; *cyrilliella* O. G. Costa, [1836].

cyrilli O. G. Costa, ***Crambus,*** [1829], *Dizion. Univ. Agric.* **5** : [?], pl., figs 2, 4 ; [1841], *Cat. Lepid. Regno Napoli* : [15], pl., figs 2, 4.

The date [1829] is based on information in Costa, [1836] : [246] ; that of the reprinted edition [1841] is taken from [Savage], 1925 : 183.

Current status : junior subjective synonym of *Euchromius ocellea* (Haworth, 1811) [Pyralidae] (Błeszyński, 1965 : 84).

See also : *cirillella* O. G. Costa, [1836] ; *cyrillella* O. G. Costa, [1836] : *cyrilliella* O. G. Costa, [1836].

cyrilliella O. G. Costa, ***Tinea (Phycis),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [246] [incorrect (multiple) original spelling of *cyrillella* O. G. Costa, [1836]].

domicolella O. G. Costa, ***Tinea,*** 1834c, *Annuar. zool., Napoli* **1834** : 75.

Current status : *Tinea domicolella* O. G. Costa [Tineidae].

duponcheliana O. G. Costa, ***Sericoris,*** 1847, *Annali Accad. Aspir. Nat. Napoli* (2) **1** : 77.

Current status : junior subjective synonym of *Hysterosia duponchelana* (Dnponchel, 1843) [Cochylidae] (Razowski, 1970 : 76).

epipalpella O. G. Costa, ***Phycis,*** 1834c, *Annuar. zool., Napoli* **1834** : 76.

Current status : *Phycita epipalpella* (O. G. Costa) **comb. n.** [Pyralidae].

eumenipennella O. G. Costa, ***Elachista (Ornix),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [297], [313], pl. (Lep. Nott.) 6, figs 4A, 4b.

Current status : ? *Coleophora eumenipennella* (O. G. Costa) [Coleophoridae] (Stainton, 1869 : 270).

fastuosella O. G. Costa, ***Oe*[*cophora*]*,*** 1834a, *Specie nuove Lepid. Regno Napoli* : 5, pl. 2, figs 7a, 7b ; ***Oecophora,*** [1836], *Fauna Regno Napoli,* Lepidotteri : [279], [312], pl. (Lep. Nott.) 2, figs 7a, 7b.

Current status : junior subjective synonym of *Stathmopoda pedella* (Linnaeus, 1761) [Stathmopodidae] (Hartig, 1939 : 19, 20).

flammeaepennella O. G. Costa, ***Elachista (Ornix),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [298], [313], pl. (Lep. Nott.) 5, fig. 8A.

Current status : junior subjective synonym of *Elachista subocellea* (Stephens, 1834) [Elachistidae]. **Syn. n.**

flavella O. G. Costa, ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [233] (nom. praeocc.).

Junior primary homonym of *Tinea flavella* Hübner, 1796.

Current status : no replacement name is currently available for *Tinea flavella* O. G. Costa (nom. praeocc.) ; a new name shonld not be proposed until the taxonomic status has been clarified.

flavellus O. G. Costa, ***Tinea (Chilo) luteellus*** var., [1836], *Fauna Regno Napoli,* Lepidotteri : [241] (nom. praeocc.).

Junior primary homonym of *Tinea flavella* Hübner, 1796.

Current status : junior subjective synonym of *Cholius ochrealis* ([Denis & Schiffermüller], 1775) [Pyralidae] (Zeller, 1847 : 746).

flavocerella O. G. Costa, ***Oecophora,*** [1836], *Fauna Regno Napoli,* Lepidotteri : [284], [312], pl. (Lep. Nott.) 4, figs 6A, 6b.

Current status : ? senior snbjective synonym of *Lecithocera luticornella* (Zeller, 1839) [Lecithoceridae] (Stainton, 1869 : 270).

fuliginella O. G. Costa, ***Tinea (Rhinosia),*** [1836], *Fauna Regno Napoli,* Lepidotteri : [259].

Current status : *Dichomeris fuliginella* (O. G. Costa) [Gelechiidae] (Stainton, 1869 : 268).

gemmatella O. G. Costa, ***Elachista (Elachista),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [294], [313], pl. (Lep. Nott.) 7, fig. 3A.
Current status : junior subjective synonym of *Glyphipteryx linneella* (Clerck, 1759) [Momphidae] (Stainton, 1869 : 269).

****griseodactyla*** O. G. Costa, ***Alucita,*** 1834c, *Annuar. zool., Napoli* **1834** : 77 (nomen nudum).

griseolana O. G. Costa, ***Plutella,*** 1834c, *Annuar. zool., Napoli* **1834** : 76.
Current status : *Plutella griseolana* O. G. Costa [Yponomeutidae].

griseolella O. G. Costa, ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [233].
Current status : ? junior subjective synonym of *Triaxomera parasitella* (Hübner, 1796) [Tineidae] (Stainton, 1869 : 267).

hirtella O. G. Costa, ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [231], [312], pl. (Lep. Nott.) 4, fig. 7A.
Current status : ? junior subjective synonym of *Schiffermuelleria tinctella* (Hübner, 1796) [Oecophoridae] (Stainton, 1869 : 267).

****hisabellella*** O. G. Costa, ***Elachista (Ornix),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [299], [314], pl. (Lep. Nott.) 12, figs A, b [incorrect original spelling of *isabellella* O. G. Costa, [1836]].

irenella O. G. Costa, ***Elachista (Elachista),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [292], [313], pl. (Lep. Nott.) 6, fig. 6A.
Current status : ? *Nepticula irenella* (O. G. Costa) [Nepticulidae] (Stainton, 1869 : 269).

isabellella O. G. Costa, ***Elachista (Ornix),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [299], [314], pl. (Lep. Nott.) 12, figs A, b [as *hisabellella*, incorrect original spelling].
Current status : *Stagmatophora isabellella* (O. G. Costa) [Momphidae] (Rebel, 1901 : 188).
See also : *hisabellella* O. G. Costa, [1836].

italellus A. Costa, ***Crambus,*** 1887, *Rend. Accad. Sci. fis. mat. Napoli* **26** : 244 ; 1888c, *Atti Accad. Sci. fis. mat. Napoli* (2) **1** (10) : 9, pl. 1, fig. 9.
Current status : junior subjective synonym of *Catoptria luctiferella luctuella* (Herrich-Schäffer, 1855) [Crambidae] (Błeszyński, 1965 : 269).

japygiaria O. G. Costa, ***Boarmia,*** (1849), *Fauna Regno Napoli*, Lepidotteri : [384], pl. (Geom.) 9, fig. 5.
Current status : *Hemerophila japygiaria* (O. G. Costa) [Geometridae] (Prout, 1915 : 362).

kollarella O. G. Costa, ***Tinea,*** 1832, *Specie nuove Lepid. Regno Napoli* : 8, pl. 1, fig. 4 ; ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [219], [311], pl. (Lep. Nott.) 1, fig. 4.
Current status : *Odites kollarella* (O. G. Costa) [Xyloryctidae] (Sattler, 1973 : 202).

****laciniaepennella*** O. G. Costa, ***Ornix,*** 1834c, *Annuar. zool., Napoli* **1834** : 77 (nomen nudum).

lacteomarginata A. Costa, ***Pempelia,*** 1888f, *Atti Accad. Sci. fis. mat. Napoli* (2) **2** (8) : 36.
Current status : *Pempelia lacteomarginata* A. Costa [Pyralidae].

leopoldella O. G. Costa, ***Tinea,*** 1832, *Specie nuove Lepid. Regno Napoli* : 5, pl. 1, figs 1A, 1B ; ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [217], [227], [311], pl. (Lep. Nott.) 1, figs 1A, 1B.
Current status : *Meessia leopoldella* (O. G. Costa) [Tineidae] (Hartig, 1939 : 7, 19).

****lineaella*** O. G. Costa, ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [289] [incorrect (multiple) original spelling of *lineella* O. G. Costa, [1836]].

lineella O. G. Costa, ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [289] [as *lineaella*, incorrect (multiple) original spelling] ; [313], [314], pl. (Lep. Nott.) 6, fig. 7A.
Current status : ? *Elachista lineella* (O. G. Costa) [Elachistidae] (Stainton, 1869 : 270).
See also : *lineaella* O. G. Costa, [1836].

lividaria O. G. Costa, ***Aspilates,*** (1848), *Fauna Regno Napoli*, Lepidotteri : [365], pl. (Geom.) 5, fig. 2.
Current status : junior subjective synonym of *Rhodometra sacraria* (Linnaeus, 1767) [Geometridae] (Prout, 1935 : 435).

luctuosella O. G. Costa, ***Elachista (Ornix),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [296], [312], pl. (Lep. Nott.) 3, figs 8A, 8b.
Current status : ? *Coleophora luctuosella* (O. G. Costa) [Coleophoridae] (Stainton, 1869 : 270).

lunulalis O. G. Costa, ***Pyralis (Nymphula),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [204], [312], pl. (Lep. Nott.) 3 [erroneously cited in text as 4], fig. 3.
Current status : junior subjective synonym of *Hellula undalis* (Fabricius, 1781) [Pyralidae] (Zeller, 1847 : 582).

lunulella O. G. Costa, ***Tinea (Lispe),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [251], [313], pl. (Lep. Nott.) 5, figs 5A, 5b.
Current status : *Euzophera lunulella* (O. G. Costa) [Pyralidae] (Roesler, 1973 : 212).

lupinus O. G. Costa, ***Satyrus,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [69], [311], pl. (Lep. Diurn.) 4, figs 3, 4 [erroneously cited in text as 1, 2].
Current status : *Hyponephele lupinus* (O. G. Costa) [Satyridae] (Higgins & Riley, 1970 : 206).

luridella O. G. Costa, ***Tinea (Phycis),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [247], [313], pl. (Lep. Nott.) 8, fig. 3 [erroneously cited in text as 1].
Current status : *Phycita luridella* (O. G. Costa) **comb. n.** [Pyralidae].

luteolella O. G. Costa, ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [283], [312], pl. (Lep. Nott.) 4, figs 4A, 4b.
Current status : *Oecophora luteolella* O. G. Costa [Oecophoridae].

macrocerella O. G. Costa, ***Elachista,*** 1834c, *Annuar. zool., Napoli* **1834** : 76.
Current status : *Elachista macrocerella* O. G. Costa [Elachistidae].

macrocerella O. G. Costa, ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [229], [312], pl. (Lep. Nott.) 3, figs 4a, 4A, 4B.
Current status : junior subjective synonym of *Heliozela sericiella* (Haworth, 1828) [Heliozelidae] (Hartig, 1939 : 9, 19).

majorellus O. G. Costa, ***Tinea (Chila),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [241], [313], pl. (Lep. Nott.) 8, fig. 1 (nom. praeocc.).
Junior primary homonym of *Tinea majorella* [Denis & Schiffermüller], 1775.
Current status : junior subjective synonym of *Etiella zinckenella* (Treitschke, 1832) [Pyralidae] (Whalley, 1973 : 15).

malifoliella O. G. Costa, ***Elachista (Elachista),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [293].
Current status : senior subjective synonym of *Leucoptera scitella* (Zeller, 1839) [Lyonetiidae] (Stainton, 1869 : 269).

marginella O. G. Costa, ***Elachista (Ornix),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [299], [313], pl. (Lep. Nott.) 7, fig. 4A.
Current status : ? *Coleophora marginella* (O. G. Costa) [Coleophoridae] (Stainton, 1869 : 270).

m-clementinella O. G. Costa, ***Tinea,*** 1832, *Specie nuove Lepid. Regno Napoli* : 6, pl. 1, fig. 3 ; ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [217], [311], pl. (Lep. Nott.) 1, fig. 3.
Current status : ? junior subjective synonym of *Esperia oliviella* (Fabricius, 1794) [Oecophoridae] (Stainton, 1869 : 266).

minimella O. G. Costa, ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [230], [312], pl. (Lep. Nott.) 4, figs 5A, 5B (nom. praeocc.).
Junior primary homonym of *Tinea minimella* [Denis & Schiffermüller], 1775.
Current status : ? *Nepticula minimella* (O. G. Costa) [Nepticulidae] (Stainton, 1869 : 267).
No replacement name is currently available for *Tinea minimella* O. G. Costa (nom. praeocc.) ; a new name should not be proposed until the taxonomic status has been clarified.

minor O. G. Costa, ***Pontia rapae*** Ochsenheimer var., [1836], *Fauna Regno Napoli*, Lepidotteri : [32] ; ***Pieris,*** [311] ; pl. (Lep. Diurn.) 3, figs 3, 4.
Current status : junior subjective synonym of *Pieris rapae* (Linnaeus, 1758) [Pieridae] (Talbot, 1932 : 237).

mirtalis O. G. Costa, ***Aspilates,*** 1834c, *Annuar. zool., Napoli* **1834** : 74.
Current status : junior subjective synonym of *Cyclophora puppilaria* (Hübner, 1796–99) [Geometridae] (Prout, 1934 : 84).

moschettinella O. G. Costa, ***Oecophora,*** 1839c, *Corrisp. zool.* **1** : 118 ; 1840b, *Monogr. Insetti* : 30, pl. 3, figs 2A, 2a.
Current status : ? junior subjective synonym of *Prays oleae* (Bernard, 1788) [Yponomeutidae] (Pelekassis, 1962 : 207).

****moschettini*** O. G. Costa, ***Ypsolophus,*** [1841], *Cat. Lepid. Regno Napoli* : 13 (nomen nudum).

nephrotomaeformis O. G. Costa, ***Sesia,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [112], [314], pl. (Lep. Nott.) 13, fig. 1.
Current status : *Sesia nephrotomaeformis* O. G. Costa [Sesiidae].

parallelalis O. G. Costa, ***Pyralis (Nymphula),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [176], [313], pl. (Lep. Nott.) 10 [erroneously cited in text as 1], figs 2A, 2b, 2AB.
Current status : *Nymphula parallelalis* (O. G. Costa) **comb. n.** [Pyralidae].

****parvula*** O. G. Costa, ***Pyralis (Pyrausta) punicealis*** Fabricius var. ?, [1836], *Fauna Regno Napoli*, Lepidotteri : [198].
The name *parvula* O. G. Costa, [1836], is unavailable as it was first published in synonymy.

****passerinella*** O. G. Costa, ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [312] [incorrect (multiple) original spelling of *passeriniella* O. G. Costa, [1836]].

passeriniella O. G. Costa, ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [284] ; [312] [as *passerinella*, incorrect (multiple) original spelling] ; pl. (Lep. Nott.) 4, figs 3A, 3b.
Current status : *Oecophora passeriniella* O. G. Costa [Oecophoridae].
See also : *passerinella* O. G. Costa, [1836].

pernicipennella O. G. Costa, ***Elachista (Ornix),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [301], [311], pl. (Lep. Nott.) 2, figs 4a, 4c [unnecessary replacement name for *Oecophora angulosella* O. G. Costa, [1834]].
Current status : junior objective synonym of *Oecophora angulosella* O. G. Costa, [1834] ; ? junior subjective synonym of *Glyphipterix equitella* (Scopoli, 1763) [Glyphipterigidae] (Stainton, 1869 : 269).

phrynella O. G. Costa, ***Elachista (Elachista),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [292], [313], pl. (Lep. Nott.) 6, fig. 8A.
Current status : ? junior subjective synonym of *Lyonetia clerkella* (Linnaeus, 1758) [Lyonetiidae] (Stainton, 1869 : 269).

prochitana O. G. Costa, ***Pyralis,*** 1834c, *Annuar. zool., Napoli* **1834** : 74.
Current status : *Pyralis prochitana* O. G. Costa [Pyralidae].

psycodella O. G. Costa, ***Psyche,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [135].
Current status : *Psyche psycodella* O. G. Costa [Psychidae].

****psyodactyla*** O. G. Costa, ***Alucita,*** 1834c, *Annuar. zool., Napoli* **1834** : 77 (nomen nudum).

punctella O. G. Costa, ***Palpula (Palpula),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [268], [313], pl. (Lep. Nott.) 7, figs 2A, 2b.
Current status : *Protasis punctella* (O. G. Costa) [Oecophoridae] (Rebel, 1901 : 166).

punctella O. G. Costa, ***Phycis,*** 1834c, *Annuar. zool., Napoli* **1834** : 76.
Current status : *Phycita punctella* (O. G. Costa) **comb. n.** [Pyralidae].

punctivittella O. G. Costa, ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [288], [312], pl. (Lep. Nott.) 5, fig. 1A.
Current status : *Scythris punctivittella* (O. G. Costa) [Scythrididae] (Stainton, 1869 : 270).

****punctoradiella*** O. G. Costa, ***Elachista,*** 1834c, *Annuar. zool., Napoli* **1834** : 77 (nomen nudum).

***punctularia** O. G. Costa, **Acidalia,** 1834c, *Annuar. zool., Napoli* **1834** : 74 (nomen nudum).

***quaerendaria** O. G. Costa, **Larentia,** (1850), *Fauna Regno Napoli*, Lepidotteri : [418], pl. (Geom.) 13 [erroneously cited in text as 14], fig. 2.

Current status : junior subjective synonym **(syn. n.)** of *Orthonama obstipata* (Fabricius, 1794) [Geometridae].

***ramphastipennella** O. G. Costa, **Ornix,** 1834c, *Annuar. zool., Napoli* **1834** : 77 (nomen nudum).

***ricciardella** O. G. Costa, **Tinea (Tinea),** [1836], *Fauna Regno Napoli*, Lepidotteri : [228], [312], pl. (Lep. Nott.) 3, fig. 7A.

Current status : junior subjective synonym of *Tischeria ekebladella* (Bjerkander, 1795) [Tischeriidae] (Stainton, 1869 : 267).

***romani** O. G. Costa, **Noctua,** [1841], *Cat. Lepid. Regno Capoli* : 12 (nomen nudum).

***romaniana** O. G. Costa, **Tortrix (Cochylis),** 1839c, *Corrisp. zool.* **1** : 121 ; 1840b, *Monogr. Insetti* : 33, pl. 3, figs 3A, 3a, 3b, 3c.

Current status : junior subjective synonym **(syn. n.)** of *Lobesia botrana* ([Denis & Schiffermüller], 1775) [Tortricidae].

***ruginaria** O. G. Costa, **Aspilates,** (1848), *Fauna Regno Napoli*, Lepidotteri : [363], pl. (Geom.) 10, fig. 1.

Current status : junior subjective synonym of *Lythria purpuraria* (Linnaeus, 1758) [Geometridae] (Prout, 1914 : 156).

***sangiovannella** O. G. Costa, **Tinea (Tinea),** [1836], *Fauna Regno Napoli*, Lepidotteri : [223], [312], pl. (Lep. Nott.) 3, figs 5A, 5B.

Current status : ? junior subjective synonym of *Phyllonorycter ulmifoliella* (Hübner, 1814–17) [Gracillariidae] (Stainton, 1869 : 267).

***scyllaella** O. G. Costa, **Oecophora,** [1836], *Fauna Regno Napoli*, Lepidotteri : [287], [313], pl. (Lep. Nott.) 6, fig. 1A.

Current status : junior subjective synonym of *Telechrysis tripuncta* (Haworth, 1828) [Oecophoridae] (Stainton, 1869 : 270).

***serraria** A. Costa, **Hemerophila,** 1882a, *Atti Accad. Sci. fis. mat. Napoli* **9** (6) : 41, pl., fig. 13.

Current status : *Menophria serraria* (A. Costa) [Geometridae] (Prout, 1915 : 363).

***servillella** O. G. Costa, **Tinea (Tinea),** [1836], *Fauna Regno Napoli*, Lepidotteri : [219] ; 1840b, *Monogr. Insetti* : 30, pl. 3, figs 1A, 1a.

Current status : junior subjective synonym of *Prays oleae* (Bernard, 1788) [Yponomeutidae] (Balachowsky, 1966 : 181).

***spiralis** O. G. Costa, **Pyralis (Botys),** [1836], *Fauna Regno Napoli*, Lepidotteri : [192].

Current status : *Pyrausta spiralis* (O. G. Costa) **comb. n.** [Pyralidae].

***squalidaria** O. G. Costa, **Hemithea,** (1848), *Fauna Regno Napoli*, Lepidotteri : [331], pl. (Geom.) 2, fig. 4.

Current status : *Hylaea squalidaria* (O. G. Costa) [Geometridae] (Prout, 1915 : 322).

***subduplicaria** O. G. Costa, **Eubolia,** (1849), *Fauna Regno Napoli*, Lepidotteri : [402] [as *sudduplicaria*, incorrect (multiple) original spelling] ; pl. (Geom.) 12, fig. 2 ; (1850), *ibidem* : [403].

It should be noted that although p. [402] was published in (1849) and p. [403] in (1850), the description on p. [402] satisfies all the relevant provisions of the *Int. Code zool. Nom.* ; the name *subduplicaria* should therefore be dated from (1849).

Current status : junior subjective synonym of *Colostygia parallelolineata* (Retzius, 1783) [Geometridae] (Prout, 1914 : 232).

See also : *sudduplicaria* O. G. Costa, (1849).

***sudduplicaria** O. G. Costa, **Eubolia,** (1849), *Fauna Regno Napoli*, Lepidotteri : [402] [incorrect (multiple) original spelling of *subduplicaria* O. G. Costa, (1849)].

tigratella O. G. Costa, ***Oe*[*cophora*], 1834a, *Specie nuove Lepid. Regno Napoli* : 3, pl. 2, figs 3a, 3b ; ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [276], [311], pl. (Lep. Nott.) 2, figs 3a, 3b.

Current status : *Anacampsis tigratella* (O. G. Costa) [Gelechiidae] (Hartig, 1939 : 12, 19).

transversalis O. G. Costa, ***Pyralis (Nymphula),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [204], [313], pl. (Lep. Nott.) 7, fig. 5 [erroneously cited in text as 2].

Current status : *Nymphula transversalis* (O. G. Costa) **comb. n.** [Pyralidae].

triangulosella O. G. Costa, ***Tinea (Plutella),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [262], [313], pl. (Lep. Nott.) 6, figs 2A, 2b.

Current status : junior subjective synonym of *Caloptilia stigmatella* (Fabricius, 1781) [Gracillariidae] (Stainton, 1869 : 268).

triangulum A. Costa, ***Aconthia lucida*** var., 1882b, *Atti Accad. Sci. fis. mat. Napoli* **9** (11) : 39.

Current status : junior subjective synonym of *Acontia lucida* (Hufnagel, 1766) [Noctuidae] (Warren, 1913 : 285).

****tricinctella*** O. G. Costa, ***Lita,*** 1834e, *Annuar. zool., Napoli* **1834** : 76 (nomen nudum).

tricinctella O. G. Costa, ***T*[*inea*], 1834a, *Specie nuove Lepid. Regno Napoli* : 7, pl. 2, figs 2a, 2c ; ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [223], [311], pl. (Lep. Nott.) 2, figs 2a, 2c.

Current status : ? junior subjective synonym of *Micropterix thunbergella* (Fabricius, 1794) [Micropterigidae] (Stainton, 1869 : 267).

trigonalis O. G. Costa, ***Pyralis (Hypena),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [180].

Current status : *Hypena trigonalis* (O. G. Costa) **comb. n.** [Noctuidae].

trimaculella O. G. Costa, ***Oecophora,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [285], [313], pl. (Lep. Nott.) 5, figs 6A, 6b.

Current status : *Oecophora trimaculella* O. G. Costa [Oecophoridae].

tripunctalis O. G. Costa, ***Pyralis (Nymphula),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [203], [312], pl. (Lep. Nott.) 3 [erroneously cited in text as 4], figs 1, 1b, 2, 2b.

Current status : *Nymphula tripunctalis* (O. G. Costa) **comb. n.** [Pyralidae].

tristigmatella O. G. Costa, ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [232], [312], pl. (Lep. Nott.) 4, fig. 8A.

Current status : junior subjective synonym of *Tinea pellionella* (Linnaeus, 1758) [Tineidae] (Stainton, 1869 : 267).

trochilipennella O. G. Costa, ***Elachista (Ornix),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [296], [312], pl. (Lep. Nott.) 3, figs 6A, 6b.

Current status : junior subjective synonym of *Coleophora spissicornis* (Haworth, 1828) [Coleophoridae] (Hartig, 1939 : 19, 20).

****urticaella*** O. G. Costa, ***T*[*inea*], 1834a, *Specie nuove Lepid. Regno Napoli* : 7, pl. 2, figs 1a, 1c ; ***Tinea (Tinea),*** [1836], *Fauna Regno Napoli*, Lepidotteri : [222] [incorrect (multiple) original spelling of *urticella* Costa, 1834].

urticella O. G. Costa, ***T*[*inea*], 1834a, *Specie nuove Lepid. Regno Napoli* : 7, pl. 2, figs 1a, 1c ; ***Tinea (Tinea),*** [1836] *Fauna Regno Napoli*, Lepidotteri : [222] [as *urticaella*, incorrect (multiple) original spelling] ; [311], pl. (Lep. Nott.) 2, figs 1a, 1c.

Current status : junior subjective synonym of *Micropterix calthella* (Linnaeus, 1761) [Micropterigidae] (Zeller, 1847 : 805).

See also : *urticaella* O. G. Costa, 1834.

****vallicolellus*** A. Costa, *Crambus*, 1884, *Rend. Accad. Sci. fis. mat. Napoli* **23** : 81 (nomen nudum).

vallicolellus A. Costa, ***Crambus,*** 1885, *Bull. Soc. ent. ital.* **17** : 252 ; 1888b, *Atti Accad. Sci. fis. mat. Napoli* (2) **1** (9) : 60.

Current status : *Agriphila latistria vallicolella* (A. Costa) [Crambidae] (Błeszyński, 1965 : 244).

See also : *vallicolellus* A. Costa, 1884.

verginalis** O. G. Costa, ***Phalaena, [1841], *Cat. Lepid. Regno Napoli* : 13 [incorrect (multiple) original spelling of *virginalis* O. G. Costa, [1841]].

virginalis O. G. Costa, ***Phalaena,*** [1841], *Cat. Lepid. Regno Napoli* : 13 [as *verginalis*, incorrect (multiple) original spelling] ; [15], pl., fig. 1 (nom. praeocc.).

Junior primary homonym of *Phalaena virginalis* Geoffroy, 1785.

Current status : junior subjective synonym of *Eucrostes indigenata* (de Villers, 1789) [Geometridae] (Prout, 1913 : 166).

See also : *verginalis* O. G. Costa, [1841].

vittella O. G. Costa, ***Oecophora,*** 1834c, *Annuar. zool., Napoli* **1834** : 76 (nomen nudum) ; [1836], *Fauna Regno Napoli*, Lepidotteri : [287], [313], pl. (Lep. Nott.) 5, figs 3A, 3b.

Current status : *Scythris vittella* (O. G. Costa) [Scythrididae] (Hartig, 1939 : 17, 20).

wredowii O. G. Costa, ***Cucullia,*** [1836], *Fauna Regno Napoli*, Lepidotteri : [173], [314], pl. (Lep. Nott.) 14, figs 1, 2, 3.

Current status : *Cucullia wredowii* O. G. Costa [Noctuidae] (Boursin, 1964 : 221).

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